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ABSTRACT

Presented are 13 readings on the integration of deaf students at California State University, Northridge (CSUN). Two introductory papers describe the CSUN plan for higher education of the deaf. Six papers on interpreters cover the following topics: the use of interpreters in an integrated liberal arts setting, a handbook for interpreters, a survey of attending behavior of deaf graduate students to interpreters, the effects of fatigue on the competence of interpreters for the deaf, sign language interpretation under four interpreting conditions, and the effects of Ameslan versus Siglish upon test scores. Examined in the next three articles are the perceptions and attitudes of hearing students and faculty toward the hearing impaired students. Two final papers include a study of the relationship between study attitudes and methods and grade point average of undergraduate hearing impaired students at CSUN, and comparative studies of academic achievement between hearing impaired and normal hearing students at CSUN. (LS)

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California State University, Northridge

Center on Deafness Publication Series

Numoer 1.

Selected Readings in the Integration of Deaf Students at CSUN

Harry J. Murphy
Editor

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FOREWORD

This report introduces the Center on Deafness Publication Series. The publication series represents our desire to share new educational models, research findings, and promising experiences of deaf learners at CSUN.

Selected Readings in the Integration of Deaf Students at CSUN documents our experiences in integrating deaf students into the normal routine of a large metropolitan university in suburban Los Angeles. The articles represent the work of Center on Deafness staff members, students in the National Leadership Training Program in the area of the Deaf, and consultants to the Center. It is an initial attempt to describe and more importantly to quantify the integrated postsecondary experience of deaf students at CSUN.

Publication #2, a monograph by Miles and Fant dealing with Deaf Theatre, is in press. A number of research studies currently in process at CSUN will be reported in future publications.

Our hope is that the Center on Deafness Publication Series will prove a suitable vehicle for communication about the things we do and your reactions to them. Please feel free to contact me directly about the issues raised in this series.

Ray L. Jones
Director
Center on Deafness

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PREFACE

The literature of educational "mainstreaming" for deaf individuals is characterized by a lack of empirical documentation. This publication is an attempt to describe a specific model and to offer data to substantiate some of the issues regarding the integration of deaf students in a postsecondary setting designed for non-handicapped individuals.

The papers included are derived from writings of Center on Deafness administrators and consultants, as well as from graduate projects written by students in the National Leadership Training Program in the Area of the Deaf (NLTP).

The NLTP started in 1962 and the first deaf students came to campus in 1964. Since that time, a number of graduate projects written by hearing and deaf participants alike have dealt with various issues concerning integrated postsecondary education of deaf students. Some, written before 1972, refer to CSUN by its former name, San Fernando Valley State College (SFVSC). The studies included here have been completely rewritten and/or edited for publication.

What are the issues regarding postsecondary deaf students? Some may be:

(1) What services are required to insure successful integration?
(2) How effective are the individual services, particularly interpreting?
(3) Is sign language an adequate medium for the transmission of college-level information?
(4) Is one sign language system more effective than another?
(5) How long can an interpreter interpret before a significant number of mistakes affect delivery?
(6) How long can a deaf student reasonably attend to an interpreter?
(7) What social factors come into play in a college designed for non-handicapped students? Are deaf students accepted by professors and hearing students?
(8) What are the characteristics of successfully integrated students?

The research possibilities are intriguing, and seemingly endless. We do not have full answers to all the questions posed above, but we do have a few indicators which convince us that the particular model is sound and worthy of replication.

Selected Readings in the Integration of Deaf Students at CSUN deals with the particular model of integration as practiced at CSUN. Separate sections are concerned with a) the model itself, b) the use of interpreters, c) attitudes of hearing students toward deaf students, d) achievement of deaf students, and e) a closing challenge to the CSUN program.

The Model

"The Northridge Plan for Higher Education of the Deaf" (Jones and Murphy) was the first publication to fully define the model of integration at CSUN. "Integrated Education for Deaf College Students," by the same authors, attempted to describe the benefits of integration to the non-handicapped, as well as to handicapped students.

Use of Interpreters

"The Use of Interpreters in an Integrated Liberal Arts Setting" (Hughes, Wilkie, and Murphy) describes the recruitment, assignment, and evaluation of interpreters. *A Handbook for Interpreters* (Flu, et al.) is the official policy statement of the service unit, Campus Services for the Deaf.

Studies follow which address themselves to specific issues in interpreting. Rudy, for example, found that graduate deaf students attended to the interpreter about 88% of the time. Brasel found that interpreters begin making a significant number of mistakes after about an hour of interpreting without a break.

Two studies deal with the relative efficiency of American Sign Language and Signed English. Fleischer and Cottrell found that high school level material interpreted in American Sign Language resulted in higher test scores than similar material delivered in Signed English. However, in a follow-up study by Murphy and Fleischer using college-level material and controlling for the sign language preference of the deaf subjects, no differences were found between the two sign language systems.

Attitudes of CSUN Professors and Hearing Students

Randall found that hearing students perceive deaf students as equals in terms of educational background and academic achievement. CSUN professors rated deaf students higher in academic interest than hearing students, but felt they were lower in academic ability. CSUN faculty and students showed a favorable attitude toward hearing-impaired students.

Jacobs found that hearing students viewed their hearing-impaired classmates as academic peers, quite well prepared, who received a little extra help from their professors.

Carter found that hearing students jointly enrolled with hearing-impaired students evidence a more favorable attitude toward hearing-impaired students, and are more knowledgeable about them than those not jointly enrolled.

Achievement of Deaf Students

How well do deaf students do academically? Fankhauser found little relationship between a particular test of study attitudes and methods, and academic achievement. More meaningful was her finding that there was no correlation between achievement and degree of hearing loss, indicating that deaf students achieve at the same rate as hard of hearing students.

In two studies which compared the achievement of deaf students with hearing students at CSUN, Murphy found that the two groups achieved at approximately the same rate.

A Challenge to the CSUN Program

In a closing paper, Edgar L. Lowell reacts to several of the articles. He indicates the obligation of CSUN to continue to do research within its program.

Taken together, the papers give a picture of a developing program. CSUN accepts the responsibility of documenting the issues which deal with the successful integration of deaf students in a postsecondary setting. Future publications addressed to these issues are planned.

THE MODEL

The Northridge Plan for Higher Education of the Deaf

Ray L. Jones and Harry J. Murphy

Introduction

The purpose of this publication is to describe a university program for deaf students. The instructional model is one of "integration," where a deaf student studies with hearing students in a typical, large university setting, utilizing the support services of interpreting, notetaking, counseling, and tutoring.

Since the program to be described here evolved from traditions in general education, higher education, and the education of the deaf, it seems appropriate to begin in the past.

General Education

The United States Constitution does not mention education. With the passage of the Tenth Amendment in 1791, the matter of education was reserved to the states.

Early recognition was given to education as a state function and the constitutions of the respective states include a statement such as the following: "The legislature shall provide for a system of common schools by which a free school shall be kept up and supported in each district at least six months in every year" (Article IX, Section 5, California Constitution).

Further consideration was given to insure the education of the handicapped by the passage of laws mandating that school districts must provide special programs for various handicapped students. Special state funds are usually provided to meet the "excess costs" of educating these students.

The Fourteenth Amendment also affects education. "No state shall make or enforce any law which shall abrogate the privileges or immunities of citizens of the United States; nor shall any state deprive any person of life, liberty, or property without due process of the law; nor deny to any person within its jurisdiction the equal protection of the laws."

While this amendment specifically addresses itself to equal protection, there is even greater significance in its implication of *equal treatment* under the law. The educational implications of segregation were tested under the Fourteenth Amendment in the case of Brown v. Board of Education of Topeka. Negro parents admitted equal facilities but charged that segregation was socially and psychologically damaging to their children. The United States Supreme Court ruled that educational segregation deprived minority children of equal educational opportunities. Separate educational facilities were held to be inherently unequal.

Higher Education

One should note that institutions take on the characteristics of their day. Harvard introduced higher education in the best tradition of Oxford and Cambridge. Harvard then became the prototype for other American colleges, offering, as Harvard did, traditional education with an emphasis on the classics.

The land grant colleges introduced an innovational departure from classical education, offering applied science and mechanic arts in the curriculum. At about this time also, the principle was advanced that every American citizen was entitled to some form of higher education.

Higher education for minority groups came more slowly. Following the influence of the day, the first colleges for Negroes were segregated. Recognizing a heritage of generations of illiteracy, such institutions as Fisk, Howard, and Talladega were first concerned with secondary education. Higher education for the American Indian is just now in its beginning stages.

Recognizing that institutions take on the characteristics of their day, one should not be surprised to see that Gallaudet opened as a college exclusively for the deaf, maintaining the pattern of segregated education. It is not unusual, therefore, to see college programs for the deaf in the 1970's advancing the concept of integration, as absorption of the handicapped into the "mainstream" of society is an educational value shared by a rapidly growing number of educators today.

Realizing the responsibility of colleges and universities to serve the unique needs of handicapped students (as well as the non-handicapped), recent federal and state legislation relating to construction spells out certain minimum standards relating to "architectural barriers" which must be met in both federal and state funded construction.

Quite literally, a barrier against the handicapped was dropped with the passing of this legislation. The physical constraints against handicapped students were recognized and legislation was passed in order to make all classrooms and campus facilities accessible to handicapped students.

Equal access to education is an idea whose time

has come. If each citizen is entitled to equal treatment to education, then any artificial barrier keeping a qualified person from the education of his choice should be removed. If an individual is kept from exercising his choice because a "bridge" is needed, then the bridge should be supplied. For the wheelchair student, a concrete bridge or ramp provides equal access. For the deaf, support services provide bridges across the communication gap.

Although each state has laws relating to architectural barriers, few states, in their higher education master plans, have considered "equal treatment" for various handicapped groups, which includes providing support services as needed. Equally important to acceptance of the responsibility to educate handicapped groups is the need to provide special budget appropriations to provide support services. This is an area where cooperation among handicapped groups, parents, and legislators may lead to legislative action to insure permanently funded, comprehensive post-secondary programs.

Education of the Deaf

The Concept of Invisibility

A strong trend in many societies has been to keep people who are in some way different out of the public eye. This might be called "The Concept of Invisibility." In an extreme example from history, we have evidence that some societies took their handicapped children to the mountaintop, and left them there to die.

The Concept of Visibility

The history of the deaf in America is characterized by the high value this nation has placed on education from its earliest days. The American School for the Deaf opened in Hartford, Connecticut, in 1817 and deaf children came out of their homes to attend school. While the children were relatively visible in this urban area, they were educated in a residential facility entirely for deaf children.

Segregated Education

As other schools opened, some were situated in urban areas such as Philadelphia and New York, while others were situated in lesser populated areas such as Devils Lake (N.D.), Cave Spring (Ga.), and Sulphur (Okla.). The residential, segregated model of education adopted by the American School in Hartford was maintained in the new school, while the concept of visibility was met to varying degrees depending, in part, on the proximity of deaf children to the rest of the population within the state.

The need for higher education for the deaf was met by the establishment of Gallaudet College in 1864 which followed the residential, segregated educational model of the day.

With the segregated model encompassing elementary, secondary, and higher education, it was possible for a deaf individual to enter a school for the deaf at an early age, complete his education there in the company of other deaf youngsters, go to Gallaudet College to train as a teacher of the deaf, and return to a residential school for the deaf to earn a living as a teacher.

The growing acceptance of the handicapped in our society led those concerned with the welfare of the deaf to explore areas where the deaf could more fully participate in life alongside hearing individuals. Again, because of the great national value placed on education, attempts to involve the handicapped more fully in society fell heavily to the school.

Integrated Education

The initiation of day classes for the deaf presented the alternative model of integrated education, offering high visibility and marking the acceptance of the handicapped into the local school system. The economics of education also received consideration because here was an opportunity to educate two groups in the same physical plant, as opposed to separate education in two expensive facilities.

As the concept of invisibility was challenged by the concept of visibility, so, now was segregated education challenged by the integrated concept of education.

Evidence of the strong trend toward integration is apparent from a review of annual statistics of deaf children educated in residential vs. day settings. Over the years, one can readily follow the growing number of students being educated in integrated settings.

Integrated Higher Education

Integrated education was offered first at the elementary and secondary levels. As the idea gained acceptance among parents and educators, one could have predicted that it would only be a matter of time before this alternative was also offered at the college and university level.

The lack of postsecondary opportunities for the deaf received attention during the 1960's at a workshop held in Knoxville, Tennessee, in the "Babbidge Report," and in the Colorado Springs Conference on Education of the Deaf. Alternatives were being sought to a single postsecondary institution, to attending college far from home, to only a liberal arts curriculum, and to an all-deaf environment.

Education of the Deaf at California State University, Northridge (CSUN)

Prior to the commitment of CSUN (formerly known as San Fernando Valley State College) to serve deaf students, the education of the deaf in

California was largely confined to mandated programs at the elementary and secondary levels. There were very limited provisions for postsecondary opportunities for California's deaf college students in their home state. The deaf residents of California journeyed to the east coast to attend Gallaudet College in Washington, D.C.

CSUN Involvement

In 1960, CSUN received a planning grant from Rehabilitation Services Administration (RSA) to design a graduate level "National Leadership Training Program in the Area of the Deaf," which was implemented in 1962 with the training of 10 participants, all of whom had normal hearing.

The first hearing-impaired students were accepted into the program in 1964, and with the assistance of interpreting and notetaking services, they earned their MA degrees in the same year. This successful pilot experience led CSUN to accept additional numbers of deaf students into the National Leadership Training Program.

The demand for service increased. Two deaf individuals from the Los Angeles area with some transferrable college units had become aware of the support services offered at CSUN, and not being able to travel east to Gallaudet to complete their education because of family commitments, asked if they could complete their undergraduate education at CSUN. They met the usual entrance requirements, competed successfully using support services, and went on to earn BA and MA degrees at CSUN.

More undergraduate and graduate students enrolled, seeking courses across the broad offerings of this large (23,000 students), urban university.

A teacher training program was initiated in 1969. More than half of the graduates of this program have been deaf.

A summer MA program began in 1971 to serve those experienced hearing and deaf teachers in need of courses for a credential and/or to gain full training in teaching the deaf. To meet their professional objectives, teachers come on campus for two summers and also do independent work at home, maintaining contact with a CSUN advisor through correspondence.

Short-term workshops were initiated to train deaf persons to work with adult education for the deaf in their respective communities.

More and more professional visitors and deaf students from other institutions came to the campus, and the educational model which evolved here was implemented at other postsecondary institutions across the country with equal success and economy.

Growth has led to the establishment of a "Center on Deafness" as an administrative coordinating unit for the programs housed on this campus. As a sub-unit, "Campus Services for the Deaf" coordinates the delivery of the services mentioned above.

Assumptions of the Model

This model assumes that the qualified deaf student is best served in the mainstream of our tax-supported institutions of higher education. It offers the equal right of local, quality education to the deaf.

The model assumes that the qualified deaf student is an academic peer of those with normal hearing and that he can successfully compete through such support services as interpreting, notetaking, tutoring, and counseling. It is assumed that these services bridge the communication gap and allow the deaf student to participate fully in the college experience.

The model further assumes that the deaf student should have a choice among institutions serving his needs. One of his options should be to choose from among our nation's larger institutions to take advantage of a great number of course offerings and major fields across diverse academic departments.

The model assumes that ties with family, friends, and community are best maintained if the deaf student continues his postsecondary education with hearing siblings and friends in an institution reasonably close to his place of residence.

The model also assumes that opportunities for employment will be greatly enhanced if instructors known to the community endorse the competence of the student in specific employment situations. There is also the higher probability of having hearing friends offer assistance in obtaining appropriate employment because in studying with the deaf student they have come to know his capabilities and strengths.

Results

As noted, the experiment began with the admission of two qualified deaf students who utilized support services to complete their program and to earn their MA degrees.

Success with this concept at the graduate level led to the acceptance of undergraduate deaf students. The undergraduate and graduate enrollment for fall semester, 1972, is about 100 students. students.

To date, a total of 82 deaf students have earned MA degrees at CSUN, competing in all cases with hearing students in regular university classes. An additional 25 are scheduled to complete graduate degrees in the spring of 1973.

Three deaf persons have gone on to earn doctorate degrees at major universities in America, utilizing the concept of support services. Another seven deaf graduates of CSUN are currently enrolled in various stages of their doctoral studies.

All deaf graduates are currently employed. Graduates of the National Leadership Training Program hold key positions in educational and rehabilitation agencies at the local, state, and national levels.

All deaf teachers are currently employed. Many

have found positions in the public day schools as well as in residential schools for the deaf. Barriers against the employment of deaf teachers in the local day schools and day classes are rapidly crumbling. The Los Angeles City Board of Education removed a last barrier in September of 1972 by employing qualified deaf teachers under the same conditions as hearing teachers. Prior to this ruling, deaf teachers were initially hired only as "long-term substitutes."

Finally, the quality and diversity of programs at CSUN was recognized by the Board of Trustees of the California State College and University System when they designated this university as the major institution for higher education for the deaf within the State of California.

Summary

The programs at CSUN provide an option to those students who qualify for admission and who choose to go here. This program widens the range of educational choices available to deaf students and more nearly approximates the concept of "equal treatment" of the handicapped.

The California Master Plan for Higher Education identifies the mission of the state college and university system as primarily serving (a) junior college transfer and graduate students seeking a liberal-arts education, and (b) students from high schools who have graduated in about the upper 1/3 of their class. We see this institution as serving deaf students in these same categories. This means that:

1. Most deaf students leaving residential schools and/or public high schools will continue to be best served at Gallaudet College, local junior college programs or in adult education.

2. Deaf students seeking education in technical or vocational fields may be best served at the National Technical Institute for the Deaf, or regional and local vocational trade schools. Programs at such places as Golden West College, St. Paul Technical Vocational Institute, Seattle Community College, Delgado College, and the Community College of Denver would also meet the needs of these students.

3. Deaf students whose qualifications conform to the California Master Plan for Higher Education will receive first priority at CSUN.

4. Deaf students entering as freshmen will in general be students who meet normal criteria for University admissions. The Center on Deafness also has the prerogative to accept "special admissions" for promising deaf students who do not fully meet the normal admissions requirement.

The "integrated" model has led to successful completion of studies for deaf persons at this institution and at other institutions at undergraduate and graduate levels, including doctoral work.

In the past five years, the model has been applied at community college and vocational school levels where it is apparently meeting with comparable success.

Our experience with this model leads us to pass on these words of caution to other institutions with an interest in implementing this system:

(a) A sound program requires more than an interpreter. A comprehensive network of such services as interpreting, counseling, tutoring, and notetaking is needed to meet the needs of students. A trained staff is essential, and continuing in-service training is needed to maintain a high level of competency throughout the support services.

(b) On-going programs need a certain minimum number of students to justify the needed support services and to give administrative efficiency to the program.

(c) Strong institutional support is necessary to give stability and visibility to the program.

(d) Permanent long-range financial support is necessary to assure entering freshmen that the services which they need will be available to them when they are seniors. Every effort should be made to secure a solid basis of financial support to maintain student interest and to insure good staff morale.

We know that many programs now lack the ingredients noted above, yet we are encouraged by acceptance of the concept. We believe that deaf students are best served when they are able to participate in life to the extent that non-handicapped individuals do. This educational model brings us closer to this ideal.

We are working with an educational model which meets the needs of deaf students at this time. We are very much involved in the *business* of educating deaf students and we know that every good business looks to the future to see which new developments will enable them to meet their objectives in some better way.

As the needs of students change, we expect to change. As new educational models develop, we intend to examine them to see if they are consistent with our objectives.

As a training institution, we feel the need to achieve excellence in all areas dealing with the development of professional skills in our students. As an institution with a deep commitment to the deaf, we also seek excellence in our service to these students.

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Integrated Education for Deaf College Students

Ray L. Jones and Harry J. Murphy

California State University at Northridge (CSUN), located in suburban Los Angeles, offers a model of integrated, postsecondary education for deaf college students. Through the use of such support services as interpreting, notetaking, and tutoring, deaf college students compete with 25,000 hearing peers in a liberal arts university setting.

The key to the program is interpreting. Forty part time interpreters, half of whom are hearing children of deaf parents, translate college lectures into "the language of signs," or sign language, as it is most commonly called. Fellow students further support the deaf student by slipping a piece of carbon paper under their notes and giving the extra copy to the deaf person at the end of class.

Professors and hearing students alike soon get used to the "extra student" who sits in front of the deaf student, off to one side of the room, giving an added dimension to a lecture by representing it in a graphic, physical, and beautiful form.

The interpreter gives visibility to deafness, an otherwise "invisible" handicap. We come to know the problems of blindness because of the visible symbols—white canes and dogs. So it is with deafness that the interpreter calls attention to the handicap at the same time the method is used to overcome it.

In 10 years of this special service, CSUN has awarded a score of bachelor's degrees and an even 100 master's degrees to deaf students. Today, approximately 120 deaf students (60 undergraduate, 60 graduate) from across the nation pursue their education in the mainstream of college life at Northridge.

These benefits accrue to the deaf student: Western residents have access to a program nearer their home; at CSUN there is a diversity of curriculum and academic majors, literally from A to Z (anthropology to zoology); deaf students have daily contact with the non-handicapped, and they compete academically, earn the same degree, and form lifelong friendships with non-handicapped persons.

Often overlooked, however, are the benefits which accrue to the non-handicapped as a result of *their* daily contact with deaf college students.

In the past, society has placed the responsibility for adjustment on the handicapped individual. A deaf person was taught to communicate like a hearing person by speechreading and by using speech. Too few deaf persons acquired these skills, and too few were integrated.

What has not been probed is the willingness of hearing persons to adjust. In the case of the deaf, sign language was thought to inhibit integration because of its singular nature. Ironically, sign language is the great facilitator of integration on the CSUN campus. Many hearing students are quite willing to learn it. Classes in sign language and interpreting are offered for credit and are so popular that we find more hearing persons enrolled in sign language classes (175) than there are deaf persons needing interpreters (120).

A non-handicapped person studying alongside a handicapped person forms a perception of him that removes the cloak of ignorance about handicapped persons. He comes to realize their special talents and limitations. He comes to expect and accept an integrated occupational situation following the college years. It would appear that the historic pattern of "putting the handicapped away" has denied non-handicapped persons a significant learning experience.

The climate at CSUN has led to the natural conclusion that there should be faculty members who are handicapped working alongside those who are non-handicapped, and today deaf instructors teach in the departments of geology, special education, and drama.

In their classes are students who can hear, some who cannot, and some who are handicapped in other ways. This makes sense to us.

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USE OF INTERPRETERS

The Use of Interpreters in an Integrated, Liberal Arts Setting

Virginia Hughes, Faye Wilkie, and Harry J. Murphy

Background

California State University, Northridge, formerly known as San Fernando Valley State College, began its activities in the area of deafness when it received a planning grant from Rehabilitation Services Administration in 1960. The purpose of the grant was to plan a "leadership training program" for workers in the field of deafness. The first leadership training class, consisting of ten hearing participants, trained during the period January-August, 1962. The second class, also consisting of ten hearing participants, trained during the same months of 1963.

In planning for the third year, it was felt that a significant dimension was missing, i.e., the participation of deaf persons themselves. Some people were locked into the traditional concept of limited job opportunities for the deaf, and spoke against the idea of accepting deaf participants. Others felt that qualified and well-trained deaf individuals would and could effectively break down occupational barriers.

A significant question was raised at this time: How would deaf persons receive the messages of their instructors? The Leadership Training Program was perceived as a multi-disciplinary approach to the many problems of administration and supervision. It was innovative. It drew from the diverse disciplines of an existing college, i.e., a college that was not exclusively for the deaf. Therefore there were hearing instructors who did not know sign language. The question was how to serve deaf individuals so that they could receive information and participate fully in class. The only answer was the use of interpreters.

Interpreting is one of five services administered by Campus Services for the Deaf, a unit of the Center on Deafness at CSUN. The interpreting staff consists of a department head (Mrs. Hughes), a senior interpreter-evaluator (Mrs. Wilkie), and 38 part-time interpreters. Campus Services for the Deaf is administered by Dr. Murphy and offers, in addition to the interpreting service, the services of counseling, tutoring, notetaking, and communication skills-building.

Campus Services for the Deaf now serves 115 hearing-impaired students at the undergraduate and graduate levels. Graduate level students include those in the National Leadership Training Program, as well as those in the program to train teachers of the deaf at the secondary level.

Since the first deaf person was served in 1964, 100 deaf persons have earned MA degrees.

Use of Interpreters at CSUN

Three critical steps in the use of interpreters at CSUN are:

A. Recruiting

B. Assigning to Classes

C. Evaluation and In-Service Training

A. *Recruiting*. About 95 percent of the 38 part-time interpreters are themselves students at the university. Most of them are undergraduates. The numbers are spread about evenly among freshmen, sophomores, juniors, and seniors. College students tend to drop out of school, transfer to other colleges, and graduate, so the pool of interpreters needs constant replenishing.

One method of recruiting interpreters is to offer an unconditional $300 stipend to incoming freshmen or transfer students who already have excellent manual communication skills. The money for interpreter stipends is raised among local service groups and similar organizations. The deaf students themselves raise funds through a banquet. Held for the first time in 1973, it is expected to become an annual event.

There is high interest among and excellent support from the university community for the programs for the deaf. Deaf students are enrolled in approximately 250 different class sections. This gives extremely high visibility to deaf students. Certainly, the most visible symbol of deafness is the interpreter in front of the class. Hearing students see the interpreter and deaf student, and many ask how they can become involved.

The first step is to begin taking sign language classes. The university offers formal credits in American Sign Language (Ameslan) throughout the year, including during the summer months. A sequence of courses and special workshops (legal, religious, etc.) in interpreting broaden the student's training. At a point where his skills are deemed minimally acceptable, he becomes eligible for employment by Campus Services for the Deaf.

B. *Assignment to Classes*. It is the responsibility of the head of interpreting services to assess the skills of prospective interpreters. Based upon this assessment, she then considers the following:

1. The student's level of comprehension of manual communication, his personal preference, and his background.
2. Class demands: lab or lecture, upper or lower division.
3. The professor's style of conducting a class, his use of visual aids.
4. The skill, availability, background, and personal preference of the individual interpreter.

The more experienced interpreter would be assigned to more of the lecture-type classes, while the beginning interpreter might first serve in a lab situation. A more experienced interpreter, probably the child of deaf parents, would be assigned where a deaf student with limited speech skills might rely heavily on reverse interpreting. A beginning interpreter would serve where reverse interpreting would be minimal.

C. *Evaluation and In-Service Training*. Interpreters are evaluated at regular intervals by senior interpreters. Recommendations for improvement are presented in a positive manner and are made on an individual basis.

Based upon an observation by an evaluator, it may be recommended that the evaluatee observe in a class where there is a more experienced interpreter, attend a short-term workshop concerning some aspect of interpreting, or attend regular in-service sessions conducted by the head of interpreting services.

The concepts of evaluation and in-service training are considered to be two elements in a single process. If evaluation points to areas that need improvement, we strongly feel that we have an obligation to provide training in those areas to insure that improvement occurs.

Most of the interpreters welcome practice in reverse interpreting and frequent sessions are held to improve these skills. Also, most interpreters need to improve their skills in fingerspelling. Again, frequent sessions are held to provide fingerspelling practice. Videotape replay is an effective teaching technique used during in-service sessions.

In summary, interpreters are recruited, assigned, and evaluated in the performance of their duties. In-service sessions are based primarily on needs identified by evaluators as they observe interpreters at work.

The record of 100 deaf graduates with earned degrees indicates the successful use of interpreters in the integrated college setting.

Reprinted with permission from *Journal of Rehabilitation of the Deaf*, January, 1974.

A Handbook for Interpreters

J. Flu, V. Hughes, J. Keller, B. Reade, J. Rose, S. N. Solow, and F. Wilkie

Background

The successful integration of deaf students into "regular" classes at California State University, Northridge has been due to several factors. In the beginning, there were people with courage and determination to transform their vision of integrated education into reality. In 1962 the first Leadership Training Program class was started, and in 1964 interpreting services were provided to deaf students attending classes. As the program grew, so did the staff, and today we have what many regard as the most highly qualified pool of interpreters in the nation. The development of a solid program attracted capable deaf students from everywhere. Their efforts to obtain an education and their successes have reflected well on them, justified the faith of the planners, and inspired the staff to improve the interpreting service.

To meet the increasing demand for good service, interpreting has changed from a tradition of "volunteerism" to a new professionalism, accompanied by high standards, the establishment of professional organizations, formulation of a code of ethics, and training, evaluation and certification opportunities. As an interpreter at California State University, Northridge, and a member of this new profession, you should be familiar with the following general guidelines as proposed by the national Registry of Interpreters for the Deaf and the specific policies of Campus Services for the Deaf at California State University, Northridge.

General Procedures

Registry of Interpreters for the Deaf Code of Ethics

You are responsible for knowing and following the Code of Ethics as outlined by the Registry of Interpreters for The Deaf. Designed to protect both the interpreter and the deaf consumer, these principles have proved to be invaluable in many situations.

Confidentiality

Interpreters are expected to view all information from an interpreting situation as confidential.

Censoring

In the interpreting situation the interpreter never has a right to censor what is said. Deaf and hearing persons should have equal access to the same information right down to curse words, in order to make their decisions about how to act on that information.

Appearance

As indicated in the Registry of Interpreters for the Deaf Code of Ethics, the interpreter should be careful of personal appearance. Following are some guidelines:

1. Men should avoid shaggy beards or moustaches which interfere with simultaneous communication.
2. Women should avoid heavy make-up, excessive jewelry, rings, bracelets, or very long fingernails. Hair should be pulled back and off the face.

Participation in Professional Organizations

For professional growth, interpreters are strongly encouraged to join their professional organizations and to get involved in significant issues regarding the emerging professionalism of interpreting. Interpreters should seek certification as personal interpreting skills develop.

California State University, Northridge, Procedures

Initial Assignment to Classes

It is the responsibility of the head of interpreting services to assess the skills of prospective interpreters. Based on this assessment, the following is then considered:

1. The student's level of comprehension of manual communication, background, and personal preference.
2. Class demands: lab or lecture, upper or lower division.
3. The professor's style of conducting a class, e.g., his use of visual aids.
4. The interpreter's skills, availability, background, and personal preference.

Additional Service

If a deaf student or teacher requests additional service from the interpreter (e.g., field trips, exams, teacher conferences), it is the responsibility of the interpreter to explain that the request must go through the Campus Services for the Deaf Interpreting Division. At that time the assignment will be made. Students and interpreters do not assign service. Normally, interpreters are not needed and, therefore, not provided for exams.

Interpreter Absences

Interpreters are responsible for notifying the Interpreting Division office at least 24 hours in advance of any assignment they are unable to fill

Night Dispatcher

In addition to the regular hours of 8:00 a.m until 5:00 p.m., the office is staffed evening hours until 10:00, Monday through Thursday. Having a night dispatcher enables us to receive last-minute changes in assignments, contact people not available during the day, and provide better service to the deaf student.

Student Tardy

Should a deaf student not show up at the beginning of the class, the interpreter waits 10 minutes for an hour class, 20 minutes for a 1½ hour class, and 30 minutes for any class over 1½ hours. If a student calls to indicate that he will be late, the interpreter should wait until the specified time has passed. (Usually, it is best to wait outside the classroom.)

Student No-Show

If a deaf student does not show up for class without notification, the interpreter is to contact the office and report the "no-show." The interpreter will be paid for an hour, but he is not to return to that assignment until notified by the office to resume service.

Pay Raises

Interpreter pay increases occur when the following criteria are met:

1. Successful completion of 300 clock hours of interpreting in the classroom.
2. Successful completion of one approved course or workshop for professional growth, or 45 hours of approved in-service.
3. Demonstrated ability.

For further explanation of pay advances, check with office statement, "Wage Increments for Hourly Employees," Rev. 8/74, available at the interpreting office.

On-The-Job

Interpreting Jackets

To facilitate professionalism and communication, interpreters are required to wear an interpreting uniform jacket when interpreting. (Available at Dorjas' Uniform Shop, 7248 Reseda Blvd., styles #63 or #53 Meta and #9139 Barco, or through the Interpreting Division.)

Punctuality

Interpreters should be punctual. Always be in class on time or preferably a little early, especially on the first day of class or when substituting. . .to introduce yourself to the professor.

Delivery

California State University, Northridge, is known for its philosophy of "simultaneous delivery." When interpreting, always mouth, without voice, the spoken words. Many hearing-impaired students, whether oral or not, depend on lip movement.

Handling Questions

Questions from the deaf student should always be directed to the teacher and questions from the teacher, to the student. The function of the interpreters is to receive and expressively transmit questions and never answer the questions themselves.

Special Signs

Interpreters may not invent signs but are encouraged to use special signs to facilitate communication in the classroom if given to them by the deaf student. However, it should be made clear that these should not be used as standard signs outside the classroom.

Critiquing

On-the-job evaluation is a policy of Campus Services for the Deaf. Interpreters are critiqued at regular intervals by senior interpreters. Recommendations for improvement are made on an individual basis. The critique procedure is regarded as a positive growth experience and constitutes the focus of in-service programs.

Public Relations

Because interpreters often serve as public relations persons for the office, it is important for interpreters to be considerate of those people who do not understand the needs of deaf people. Do not pass up an opportunity to educate people about deafness. Strive for integration of the hearing-impaired and the hearing. You are an extension of the office and will be questioned frequently. Be knowledgeable about the field of deafness and be able to refer a person to the appropriate division within the Center on Deafness.

Training

In addition to the above evaluations, there are three other areas of assistance in upgrading interpreting skill:

1. Following a predetermined semester schedule of in-service training sessions, the interpreter can receive group input regarding skill, vocabulary, or any classroom problem.
2. University classes offered in the area of interpreting can assist the interpreter in upgrading his skill while receiving units of college credit.
3. Short-term workshops on different aspects of interpreting are offered frequently. These workshops may be sponsored by the Center on Deafness, Campus Services for the Deaf, Registry of Interpreters for the Deaf, or the National Interpreter Training Consortium.

The purpose is to better equip the interpreter to meet the needs of every interpreting situation.

Community Requests

From time to time, interpreting requests are received from people outside the university. The interpreting office, unless otherwise informed, gives out names and phone numbers of interpreters. However, the interpreter should feel free to accept, negotiate, or reject such requests.

A Survey of Attending Behavior of Deaf Graduate Students to Interpreters

Les H. Rudy

All deaf students enrolled at California State University, Northridge, are registered in courses along with their hearing peers. Academic support services are provided for these students by Campus Services for the Deaf, a sub-unit of the Center on Deafness. This office provides not only interpreters, notetakers and tutors, but full-time counselors and an administrator to coordinate other activities for the deaf students on campus. For purposes of this study we will consider the textbook a fifth support service, since it is used by the students and tutors.

It is assumed that deaf students at California State University, Northridge, possess basic receptive communication skills, that is, the ability to speechread and comprehend signs and the manual alphabet. Assuming that the services offered are effective, student success in courses should reflect how effectively students are using these services.

Review of Literature

The most extensive study or report in regard to effectiveness of support services for deaf students in a college or university was done at the National Technical Institute for the Deaf in Rochester, New York. This study by Stuckless and Enders resulted in a paper entitled *A Study of Selected Support Services for Postsecondary Deaf Students in Regular Classes* (5).

The purpose of the study was to broadly measure the uses made by deaf students of interpreting, notetaking, and tutoring services, and to assess the role of the textbook in integrated postsecondary classes. The study depended entirely upon the perception of the deaf student himself. The questionnaire used was reviewed by a committee of National Technical Institute for the Deaf students during the fall quarter of 1971. Involved in the study were 345 students in 114 courses.

Of particular interest to the writer was the area of interpreting. Very few students said they derived no course content from the interpreter, and relatively few stated they derived all or almost all of their understanding of the course from the interpreter. Most of the students fell in the median range, stating that they got about 50 to 75 per cent of the course content from the interpreter.

In this National Technical Institute of the Deaf study, students who received A's and B's watched the interpreter most of the time or all of the time; whereas students who received low grades (D's or F's) tended to say that they watched the interpreter "very little" or "never." This motivated the writer to include a question to determine whether or not the students felt they would receive the same grade with or without an interpreter.

Another study was conducted by Maree Jo Keller at California State University, Northridge, in August, 1972, entitled *Survey: Understanding the Interpreter*. During a three-month period, individual interviews were conducted with 50 deaf students. The survey seemed to indicate that the interpreter should possess such attributes as friendliness and the ability to use more signs and lip movement, along with a great deal of expression, but with less fingerspelling (4).

While enrolled in classes with deaf students, the writer (who has normal hearing) has noted the particular "attending behavior" of the students to the interpreter. Several students took notes and were attentive to the interpreter; others were not particularly attentive. While observing different interpreters the writer also noted differences in the interpreter's presentation of the lecture material. Particular questions occurred to the writer that motivated this study.

1. How much does the deaf student in fact attend to the interpreter?
2. How much does the deaf student himself feel he attends the interpreter?
3. Do deaf students feel they can receive a passing grade without an interpreter?
4. Does the ability of the interpreter make a difference in regard to attending behavior?

Description of Sample

All 14 students who participated in this study were enrolled at California State University, Northridge. Ten were enrolled in the first session of summer school, from June 18 to July 25, 1973. These students were taking courses leading to a master's degree in special education. All 10 were employed during the regular school year as teachers or counselors in various school programs and residential schools in five different states. The remaining four students were involved in a graduate honors program, the National Leadership Training Program, and came from schools for the deaf throughout the United States.

Procedures

In order to determine the attending behavior of deaf students to the interpreter, the following

procedures were carried out. Each student was timed with a cumulative stop watch for three 5-minute segments during a classroom lecture. The first five minutes of class and the third and fifth 5-minute segments were timed. This was done during three separate meetings of the class, and the cumulative time that the student maintained eye contact with the interpreter was recorded.

Before the initial timing session, the professor teaching the class was contacted and informed why the timer was there. Also before the initial timing session, the students and interpreter were told that the timer would be present. Students were requested to carry on as normally as possible and not pay any attention to the timer. However, there was a difference noted between the initial timing session and the following two sessions. Students were observed looking at the timer several times during the initial session. This behavior on the part of the students was not noted during the second and third session. Thus the writer feels the behavior during the initial timing session biased the study.

The timer positioned himself in a place that facilitated the maximum view of the students' faces and at the same time was not distracting to the professor or interpreter. Following the first session it was only necessary to be in the classroom before class started, properly positioned to view the students.

Five different class situations were used: two with three deaf students mixed with 18 hearing students, two with seven deaf students in a class with 24 hearing students, and one with eight deaf students integrated into a class with seven hearing students. All classes were offered by the Department of Special Education.

Questionnaire

The questionnaire was constructed in cooperation with the Administrator of Campus Services for the Deaf, the Head of Interpreting Services, and several deaf students.

It was planned at first to give the questionnaire to the student at the appropriate time and ask him to return it after filling it out. However, many of the questions required the student to visualize or create a situation. It was felt that the amount of useful information obtained from the questionnaire during an individual face-to-face meeting with each student would insure proper understanding and, therefore, more valid results.

Definition of Terms

Fundamental definitions for purposes of this study are:

Ameslan: An acronym made from the words "American Sign Language." Ameslan does not follow the English grammatical scheme (2).

Deaf Students: Those students who have a hearing loss to the degree that they cannot understand words spoken by their college professors and are, therefore, dependent on secondary modes of communication, such as the language of signs and the manual alphabet, and who receive services from Campus Services for the Deaf.

Interpreter: An individual who translates lectures of college professors through the language of signs and the manual alphabet.

Attending Behavior: When students maintain eye contact with the interpreter.

Integration: Deaf students registered in and attending courses with hearing students.

Results of the Questionnaire

Following are the results of each item on the questionnaire that was given to all 14 students:

1. Would you prefer to have the interpreter translate verbatim or would you prefer Ameslan?
   - verbatim 10
   - Ameslan 4

2. Do you receive more information when: you are alone or with one other deaf student, or with several other deaf students sitting in class?
   - alone or one other student 3
   - several other students in class 11

3. Would you like to have the same interpreter in all your classes?
   - yes 11
   - no 3

4. Assume that after a lecture class you had to explain the important points in the lecture to another student. Do you think you could do this?
   - yes 12
   - no 2

5. When new vocabulary is introduced, do you prefer the interpreter to fingerspell it or would you prefer a short explanation in Ameslan?
   - preferred vocabulary fingerspelled 10
   - preferred short explanation in Ameslan 4

6. Let's assume that half way through a course the interpreter can no longer continue and a new interpreter takes over. You have never seen the new interpreter before. Can you adjust quickly to the new interpreter or does it take you a while to adjust?
   - takes time to adjust 10
   - adjust quickly 4

7. How much do you think you watch the interpreter? Circle one.
   - never watch (0%) 0
   - watch very little (25%) 0
   - watch about half the time (50%) 1
   - watch most of the time (75%) 10
   - watch all the time (100%) 3

8. If you did not have an interpreter, what grade do you think you would get just reading the book?
   the same with or without an interpreter . . 3
   A 1
   B 4
   C 5
   D 1
   F 0

9. What does the best interpreter you have do that makes you think he or she is the BEST? Check three.
   signs and fingerspells clearly 13
   is a good friend 0
   moves lips while interpreting 11
   understands the deaf 4
   uses expression when interpreting 14

Results and Discussion

The following tables illustrate actual eye contact maintained by the students during three separate timing sessions for three 5-minute segments: the first five minutes of the class, the third five minutes, and the fifth 5-minute segment after class began.

Table 1. Four Students in Honors Program

	Timing Session 1	Timing Session 2	Timing Session 3	Totals for 3 Sessions
Total Possible Minutes	15 Minutes	15 Minutes	15 Minutes	45 Minutes
Student #1	14 min., 41 sec.	14 min., 33 sec.	14 min., 36 sec.	43 min., 50 sec.
Student #2	13 min., 39 sec.	11 min., 20 sec.	11 min., 23 sec.	36 min., 22 sec.
Student #3	13 min., 02 sec.	13 min., 19 sec.	09 min., 28 sec.	36 min., 49 sec.
Student #4	14 min., 42 sec.	13 min., 12 sec.	14 min., 19 sec.	42 min., 13 sec.
TOTALS:	56 min., 04 sec.	52 min., 24 sec.	49 min., 46 sec.	158 min., 14 sec.
Total Possible Minutes:	60 min.	60 min.	60 min.	180 min.
DIFFERENCES:	03 min., 56 sec.	07 min., 36 sec.	10 min., 14 sec.	21 min., 46 sec.

Table 2. Master's Candidates in Special Education

	Timing Session 1	Timing Session 2	Timing Session 3	Totals for 3 Sessions
Total Possible Mins:	15 Min.	15 Min.	15 Min.	45 Min.
Student #1	14 min. 29 sec.	14 min. 04 sec.	14 min. 19 sec.	42 min. 52 sec.
Student #2	14 min. 12 sec.	12 min. 27 sec.	13 min. 55 sec.	39 min. 29 sec.
Student #3	14 min. 12 sec.	13 min. 33 sec.	13 min. 41 sec.	41 min. 26 sec.
Student #4	14 min. 07 sec.	12 min. 26 sec.	11 min. 31 sec.	38 min. 04 sec.
Student #5	11 min. 59 sec.	12 min. 11 sec.	10 min. 11 sec.	34 min. 21 sec.
Student #6	15 min. 00 sec.	14 min. 43 sec.	13 min. 59 sec.	43 min. 42 sec.
Student #7	13 min. 56 sec.	13 min. 13 sec.	12 min. 23 sec.	39 min. 32 sec.

Table 2. Continued

	Timing Session 1	Timing Session 2	Timing Session 3	Totals for 3 Sessions
Total Possible Mins:	15 Min.	15 Min.	15 Min.	45 Min.
Student #8	14 min. 13 sec.	12 min. 33 sec.	12 min. 59 sec.	39 min. 45 sec.
Student #9	13 min. 17 sec.	11 min. 55 sec.	09 min. 23 sec.	34 min. 35 sec.
Student #10	14 min. 34 sec.	14 min. 17 sec.	13 min. 49 sec.	42 min. 40 sec.
TOTALS:	139 min. 59 sec.	131 min. 17 sec.	126 min. 10 sec.	196 min. 26 sec.
Total Possible Mins:	150 Min.	150 Min.	150 Min.	450 Min.
DIFFERENCES:	10 min. 01 sec.	18 min. 43 sec.	23 min. 40 sec.	52 min. 24 sec.

Table 3 indicates the following:

1. A very definite decrease in attending behavior, both for individual students and all 10 students as a group, from the first to the third session.

2. The greatest difference for the group of 10 students occurred between the first and the third session (12 minutes, 49 seconds).

3. The least amount of difference for the group of 10 students occurred between the second and the third session (4 minutes, 50 seconds).

Table 3. Differences Noted Between Sessions

Four Students in Honors Program	
Timing Session #1	56 minutes, 04 seconds
Timing Session #2	52 minutes, 24 seconds
Difference	03 minutes, 40 seconds
Timing Session #2	52 minutes, 24 seconds
Timing Session #3	49 minutes, 46 seconds
Difference	02 minutes, 38 seconds
Timing Session #1	56 minutes, 04 seconds
Timing Session #3	49 minutes, 46 seconds
Difference	06 minutes, 18 seconds
Master's Candidates in Special Education	
Timing Session #1	139 minutes, 59 seconds
Timing Session #2	131 minutes, 17 seconds
Difference	07 minutes, 43 seconds
Timing Session #2	131 minutes, 17 seconds
Timing Session #3	126 minutes, 10 seconds
Difference	04 minutes, 50 seconds
Timing Session #1	139 minutes, 59 seconds
Timing Session #3	126 minutes, 10 seconds
Difference	12 minutes, 49 seconds

Findings and Conclusions

The research questions asked by this study were:

1. How often does the deaf student in fact attend the interpreter?

The writer approached this question in two ways: (1) by actual time samplings of attending behavior of students to interpreters, and (2) through question 7, which asked how much time the student thought he or she watched the interpreter.

The writer compared the students' answers with the actual time-sample results.

Table 4. Average Attending Behavior of 14 Students

Total possible minutes	630 minutes, 00 seconds
Total attending time of 14 students	554 minutes, 40 seconds
Difference	75 minutes, 20 seconds

The students' responses to question 7 indicate that 70 per cent thought they watched the interpreter 75 per cent of the time, 21 per cent thought they watched 100 per cent of the time, and nine per cent thought they watched half (50%) of the time. They did in fact watch the interpreter an average of 88 per cent of the time!

2. Do deaf students feel they can receive a passing grade without an interpreter?
   Only three of the 14 students thought they could get the same grade with or without an interpreter. However, *all 14* students indicated they could get a passing grade (A, B, C, or D) *without* an interpreter. *None* indicated they would fail. This indicates that interpreters may not be as useful as possibly assumed by many, particularly on a graduate level.
3. Does the ability of the interpreter make a difference in regard to attending behavior? Of five choices offered to the student for rating interpreting skills, 13 out of 14 students checked "signs and fingerspells clearly." All 14 students checked "uses expression when interpreting," 11 checked "moves lips while interpreting," and four students checked "understands the deaf." The above data would indicate that the skills needed by interpreters are more important than how they feel about deafness or if the deaf student knows them personally.

Particular questions on the questionnaire revealed more information that is worthy of mention here.

1. The majority of students prefer to have the interpreter translate the basic verbal pattern of the instructor word for word, particularly new vocabulary (10 out of 14 students).
2. Most students (11 out of 14) thought they received more information with several other deaf students in the class. However, during the time-sampling, the writer noticed that deaf students would engage in conversation with each other on occasion, and would not attend to the interpreter as much as students observed in classes with only one or two deaf students.

Summary

This study was carried out on the assumption that interpreting services, along with other support services, were in fact helpful to deaf students integrated into classes with hearing college students. Other data indicate that most students do not give the interpreter their undivided attention, and that even fewer attend to the interpreter "half" to "most of the time" (4).

The results of this completed study prompt the writer to raise several points:

1. Would the same results have been obtained with undergraduate students? It was obvious the graduate students involved were older, more experienced with interpreters, and had in fact already obtained a bachelor's degree.
2. The presence of the observer biased the study. A study similarly carried out without the timer present in the room may produce different results.
3. The background of the students must be considered. Students who enter college from residential schools have been trained with interpreters for many years; others have had oral backgrounds. Another factor in this area concerns the degree of hearing loss of individual students. Several hard-of-hearing students were noted attending not only to the interpreter but maintaining eye contact with the professor.

It is the writer's hope that this study may motivate other colleges and universities to evaluate their own support services to determine how effectively they serve their deaf students.

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The Effects of Fatigue on the Competence of Interpreters for the Deaf

Barbara Babbini Brasel

With increased recognition of the rights of deaf persons to function effectively in a world composed of those with normal hearing has come an increased emphasis upon educational and economic betterment of the deaf. This has resulted in an increased demand for skilled interpreters for an ever-increasing variety of roles—from platform interpreting at a conference or workshop, through interpreting in psychological or psychiatric settings, to verbatim translating of classroom lectures for deaf adults attending colleges for those with normal hearing.

This has not been an unmixed blessing insofar as professional interpreters for the deaf are concerned. Along with the increased demand for their services has come an increased workload for those highly competent interpreters who have chosen to accept full-time employment with programs which include deaf individuals as co-workers, students, or participants. Also there are few guidelines for the employers of these interpreters, most of whom are not familiar with the language of signs themselves and have only a limited knowledge of the strain, physical and mental, that such work imposes upon those who must translate auditory stimuli into physical movement, facial expression, and pantomime.

With no concrete guidelines established by empirical research, it is perhaps understandable that employers of interpreters on a full-time basis feel that an interpreter, who may be paid as much if not more than a full-time secretary or clerical worker who works 40 hours a week, should fill in his/her time when not actually interpreting by performing other chores such as typing, bookkeeping, filing, or even tutoring. While it is generally recognized that few interpreters can interpret for 30 or more hours a week, there have been no studies to discover exactly how long, how many hours, an interpreter *can* interpret at a time and still retain efficiency in both interpreting and clerical/secretarial tasks.

There have been many educated guesses as to how long an intepreter can interpret before fatigue begins to affect his interpreting competence, yet to the writer's knowledge no systematic study has been done in this area. In addition, it is suspected that the demands of an interpreter's physical and mental capacities imposed by sustained interpreting cannot help but have an effect upon his ability to perform other physical and intellectual chores. Interpreting for deaf persons requires that an individual, in addition to being able to sign and fingerspell fluently, have excellent recall and short-term memory ability. An interpreter must, while translating or interpreting what *has* been spoken, be able to listen to, store in his memory, and subsequently recall what *is* being spoken. Depending upon the interpreter's ability and speed of translation into the language of signs, the interpreter may be anywhere from three to seven or eight (or more) words behind the speaker. Short-term memory and recall are also important in clerical/secretarial work, for the ability to take dictation in shorthand also depends upon the same faculties as does interpreting for the deaf. Remembering spoken and written orders is also a function of short-term memory, although long-term memory faculties are also involved in the latter. Therefore, what affects short-term memory in one situation will undoubtedly affect short-term memory in a similar but unrelated situation.

Fingerspelling utilizes many of the same muscles in the hands and arms that are utilized in typing, and fatigue affecting the fingerspelling muscles should also affect the typing muscles. There may also be interference with the ability to concentrate after sustained intellectual and auditory bombardment such as takes place during the task of interpreting for a lecture, and it was decided to test this ability along with short-term memory and typing skill in a controlled experiment to elicit information on just when fatigue begins to affect physical and intellectual functioning during the task of interpreting.

A pretest-posttest design was selected to test the following hypotheses:

1. Interpreters for the deaf can interpret for 20 to 30 minutes without significant loss in interpreting competence as measured by error rate per minute and quality of interpreting performance as measured by ratings given the interpreter by competent judges before and after an interpreting task.
2. Interpreters can interpret for 20 to 30 minutes without significant deterioration in intellectual or physical skills as measured by typing speed and accuracy, ability to add a column of figures rapidly, and ability to memorize and recall five out of ten nonsense syllables (trigrams) exposed for three seconds per trial.
3. After 30 minutes of sustained interpreting, interpreting error rate will increase in proportion to increase in sustained interpreting time.
4. After 30 minutes of sustained interpreting, interpreting quality will deteriorate, and this will be evident in lower ratings given by a panel of competent judges.

5. After 30 minutes of sustained interpreting, typing speed will decrease, and typing error rate will increase in proportion to increase in time.
6. After 30 minutes of sustained interpreting, time required to add a three-digit column of numbers will increase as a function of increase in time.
7. After 30 minutes of sustained interpreting, short-term memory and recall functions, as measured by the number of trials required to correctly write down five out of ten trigrams, will deteriorate as a function of time spent in sustained interpreting.

Method

Subjects: The subjects were two male and three female interpreters selected for their recognized competence from a pool of available interpreters at California State University, Northridge. Partially successful attempts were made to select interpreters of at least acceptable ability. Of the five, four met this criterion, three being rated as either good or outstanding and one as acceptable. The fifth interpreter, while of above average ability in his command of conversational sign language, proved to be too inexperienced and slow to rate higher than high unacceptable. Although he was tested, his scores were not included in some of the statistical computations for reasons that will be discussed later in this paper.

The subjects drew straws for the length of time of their task prior to any testing.

Apparatus: A Wollensak tape recorder was utilized, with two hour-long tapes made by the same speaker, William Glasser, with the topic being the same for both tapes. Typing tests of approximately equal difficulty, length, and content were presented on an 8 X 10 sheet of paper. Two separate but equivalent tests in addition were used, each test consisting of a column of 10 three-digit numbers. Two decks of 3 X 5 cards were used. On each deck was printed a three-letter trigram. Both decks were matched (5) on numbers of high and low similarity trigrams. Also used was a Benrus stopwatch.

The testing took place in a regular classroom, each subject being tested separately. Positioned behind the interpreter, and out of his range of vision was a floodlight of moderate intensity, which was operated by a wall switch directly underneath the floodlight at about waist height. The interpreters could not tell when the floodlight was turned on or off because the room was brightly lit.

Procedure: As each subject arrived, he was presented with straws from which he drew one which had his interpreting interval time written on it. (The last interpreter, unavoidably, was *assigned* to the one remaining interval time.) He was then given the following tests, with the order randomized for each subject:

1. Trigram test: Each trigram in the first deck was exposed by the experimenter for approximately three seconds, with the experimenter holding each card upright for the mental count of "thousand one, thousand two, thousand three" before laying it down and exposing the next card. Three trials were given each subject before he was asked to write down as many of the trigrams as he could recall, in any order. All subjects were told at the beginning of the test that they were expected to use the first trials for learning and then to try to recall at least five out of ten trigrams they were shown. A maximum of ten trials was imposed.
2. Math test: The subjects were given the first math test and instructed to add the column of figures as rapidly as they could. An assistant experimenter checked their time with the stopwatch.
3. Typing test: The first typing test was then administered, each subject being given five minutes in which to type as much of the test material as possible and instructed not to attempt to correct or strike over errors.
4. Interpreting evaluation pretest: The subjects were then evaluated on a 13-item form (3) during the first five minutes of their interpreting stint, each subject being told that the first five minutes was a "warm-up" period. According to the straw drawn, the subject had to interpret for 20, 30, 60 or 90 minutes, with one subject drawing the 0-minute (control) straw. The control subject did no interpreting whatsoever and was thus not evaluated at the time of the study, evaluation of her skills having taken place by the same judges during a separate but similar study (3).
5. Interpreters were then observed by four judges, two deaf persons (including the experimenter) and two outstanding interpreters, both skilled in reverse interpreting. An additional assistant sat behind the interpreter, within reach of the switch that controlled the floodlight, and every five minutes turned the light on and off quickly so that the judges could mark the passage of each five-minute block of time.

The deaf judges concerned themselves with tallying each and every time they observed an interpreting error (slurring of fingerspelling, use of the wrong sign for a word, failure to keep up with the speaker, "bootleg rests," or any time the deaf person found himself baffled or confused or did not understand a fingerspelled or signed word). The interpreter-judges were instructed not only to listen to the tape recording but also to watch the interpreter for concepts he failed to convey or misinterpreted.

At the end of the assigned time, the subjects were given, again in randomized order, second trigram, math, and typing tests, all of which were different from but equivalent to the pretests mentioned earlier.

Results

Hypothesis 1 would seem to be supported in that the majority of the significant differences were found when subjects 4 and 5 (60 and 90 minutes) were compared. This would indicate that for up to 30 minutes, there are no significant differences in interpreting competence, errors, or quality—although a deterioration can be noted beginning at about 25 minutes. After 30 minutes, there is a slow but steady increase in error rate, and after 60 minutes this increase becomes significant.

Hypothesis 2 is partially supported in that there were no significant differences in any of the clerical skills dimensions *except* the typing error rate, which increased for all subjects regardless of the amount of time spent interpreting. Subject 2, in particular, was interesting in that while he did very poorly on the interpreting evaluation pretest, he alone of the four interpreters evaluated was judged to have improved slightly in his interpreting skill at the end of his 20-minute interpreting task. In addition, as was noted earlier, he completely failed the trigrams pretest, but managed to score better on the posttest than three out of the other four interpreters. Yet on the typing test he lost only one word per minute in speed, while his error rate more than doubled (from nine to 22). Questioned after the experiment, he stated that he had been so nervous about the prospect of interpreting in the test situation that he could not concentrate during either the math or the trigrams test. He also stated that once the interpreting task was completed, he felt much more relaxed and able to concentrate.

The fact, however, that after only 20 minutes of interpreting, his typing error rate rose to double its former level may indicate that the impact of interpreting, in a physical sense, falls hardest upon those who are relatively inexperienced or incompetent.

Hypotheses 3 through 5 and hypothesis 7, therefore, are apparently fully or at least partially supported, but hypothesis 6 was not supported by the data in this study. Part of the problem may be that different intellectual abilities are required for mathematical computations than are required in interpreting. The standard deviation of the pretest indicates a wide range of mathematical ability, and those subjects who scored low on the pretest tended to score higher on the posttest, while those who scored high on the pretest scored lower on the posttest—and this apparently had no connection with the length of time spent in interpreting.

It is recognized that there are many variables which may have influenced the results found in this study. One variable may have been knowledge of the time the interpreters would have to interpret, for when a subject is aware of the amount of time he will have to spend doing a chore, he tends to automatically "pace" himself so as not to overtax himself. Consideration was given to keeping subjects unaware of how long they would be required to interpret for the study, but it was abandoned as unfeasible because of the necessity to inform the subjects, who all had tight schedules, exactly how long their services would be required. They all asked immediately upon arrival, and in the interests of keeping peace with an overworked group of persons, it was felt wiser to let them know immediately after they had drawn their straws. This probably influenced the results, for the two interpreters (subjects 4 and 5) who drew the longest stints (the 60 and 90 minute chores) were both veteran interpreters who had learned how to pace themselves. If they had not known how long they were to interpret, it is possible the results would have been even more significant, but perhaps of limited validity because most interpreters in the field today know approximately how long they will be required to interpret in any given situation.

Subjects 4 and 5 both began interpreting with a relatively high error rate (when compared with their scores a few minutes later), then seemed to settle down and make fewer errors for the next five or 10 minutes. Then their error rates began a slow but steady climb, only to drop suddenly when the speaker on the tape paused several times, thus giving them a brief rest. This respite seemed to help only temporarily, for the error rate immediately began to climb sharply before leveling off at a high rate. Subject 5, between 60 and 75 minutes, stabilized as to error rate increase, but the judges, on their tally sheets, all commented upon the deterioration in the quality of her interpreting. Sample comments were "All life gone," "Expressionless," "Facial expression deadpan." In addition, the deaf judges also commented upon "slurring of lip movements. Can no longer understand her silent speech." Also, she kept taking "bootleg" rests, omitting increasing numbers of "non-essential" words from her verbatim translation, in other words, reverting to shorthand sign language, understandable, but far from as interesting or as accurate as verbatim translation.

Subject 4 was guilty of all these interpreting flaws as well, but to a less marked degree when compared to her pretest performance. Regardless, her evaluation on the posttest dropped from 4 (good) to 2 (marginal—borderline unacceptable), while subject 5 dropped from 5 (outstanding) to 3 (unacceptable).

Conclusions

The general conclusion to be drawn from the study is that interpreters for the deaf have a demanding job that has a significant effect upon other skills they may have, and this effect increases as the length of sustained interpreting time increases. In addition, the longer an interpreter interprets past the 30-minute mark without intervening rest periods, the more his interpreting skills will deteriorate. No assumptions

can be made on the basis of this study as to what the cumulative effects of three, four, or more hours of daily interpreting will be, with or without intervening rest periods. It might be well to note at this point that most college and university lecture periods are from one to three hours in length. Little can be done to shorten them, and it would be awkward to attempt to switch interpreters in mid-lecture, but at least employers of full-time interpreters can see that their interpreters get plenty of rest in between three-hour classes—rest that is free of other duties, which they would probably perform inefficiently anyway if the results of this study are any indication.

Recommendations

It is suggested that this study be replicated with a larger number of subjects, with screening procedures set up to match subjects on ability, experience, and educational background. In addition, research should be undertaken to discover what the recovery rate is once the interpreting chore is completed. It would be interesting and helpful to know exactly how much resting time an interpreter needs to recover his baseline skills after interpreting for a given period of time without rest. Guidelines are needed in this area, for opinions vary. Some feel that an interpreter is "resting" when engaged in non-interpreting chores, while others feel that an interpreter can interpret only 20 minutes at a time with an hour's rest in between.

Another area that needs study is that of the cumulative effects of daily interpreting without sufficient rest periods intervening. What are the effects of accumulated fatigue upon the interpreter's ability to function in non-interpreting work situations? What are the effects upon his mood and outlook? What are the effects upon his family life? These and other questions need answering in these times of increasing professionalism in the area of interpreting for the deaf, and answering them and implementing the answers into practice by those who employ interpreters can only result in upgrading the profession of interpreting for the deaf and increasing the quality of the services provided to those members of the "deaf world" who, without the services of interpreters, would find many doors into the world of the hearing closed very tightly to them.

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Sign Language Interpretation Under Four Interpreting Conditions

Lawrence Fleischer and Milford Cottrell

Statement of the Problem

The increased opportunity for deaf students to compete with hearing students in regular classrooms through the utilization of interpreting services has caused dramatic advancement in the overall area of education of the deaf. Despite this opportunity, the misinterpreted or distorted exchange of information between teacher and deaf student through an interpreter has always presented serious limitations. Babbini has described the problem as follows:

> *The deaf client/student is the one who suffers, for if his interpreter fails to convey an important concept, or misinterprets it, his comprehension of what is said is going to be distorted. At the very least, he can be made to look like a jackass if, operating on the basis of his misinformation, he attempts to participate in class discussions. At the worst, he can fail a course if examination questions are drawn heavily from lecture materials (2, p. 5).*

The role of the interpreter is a demanding one. Not only is he expected to master English and sign language and to be able to use appropriate and equivalent expressions to facilitate understanding, but he must also determine which type of delivery is most suitable for his listening audience (12).

It is very difficult, if not impossible, to classify deaf persons into various well-defined categories. They vary significantly in their educational background, etiology, age at onset of deafness, and established methods of communication. For the deaf student, methods of communication are of primary importance. According to Woodward:

> *The deaf in America are either monolingual in a variety or varieties of ASL (American Sign Language), monolingual in a variety or varieties of American English, or they are partially or completely bilingual in a variety or varieties of ASL and in a variety or varieties of English (17).*

The problem of the deaf listener is even more acute. He must, unlike his hearing counterpart, depend totally on vision to grasp meanings which may have been generated by the instructor through voice inflection alone or through word manipulation. Can the deaf person's ability to code information which has been received visually compare to the hearing person's ability to code information which has been received auditorily? Not only does the visual mechanism assimilate bits of information more slowly than the auditory mechanism, but the visual mechanism is regulated by a voluntary neuro-muscular system and is thus highly susceptible to fatigue (9).

Of primary importance to the deaf individual is his acquisition of English, over and above his manual communication skills. He must acquire English and achieve competency in sign language if he is to receive the maximum benefit from the interpreter. Bellugi has described this problem in the following manner:

> *It must be quite evident that the language production (in highly articulated manual gestures and not in the articulatory apparatus) is very different for the two types of languages—speech and sign. We have become very interested in the structural differences in the two languages which may be reflected in the change in modality of production. In addition, there is a radical difference in the organs which are used to perceive (organize, categorize, process) the two different languages; that is, the ear and the eye. There are basic respects in which our vision differs from hearing (3, p. 68).*

At California State University, Northridge (CSUN), a large number of deaf students have utilized interpreting services offered through the university. As a result, the majority of these students have been successfully competing with their hearing peers. The interpreting program has been a contributing factor in improving the image held by the general public regarding the academic capabilities of deaf students (6). With advances in the fields of psycholinguistics and sociolinguistics, a greater appreciation of the utility of sign language itself has evolved. In addition, the professional interpreter's increasing ability to accurately relay technical information has brought encouragement to the deaf student who, knowing he is studying under the best interpreting conditions possible, experiences greater confidence in his own ability to compete academically with hearing students.

Statement of Purpose

The purpose of this study was to determine the amount of information received by deaf students in a regular college setting under four interpreting conditions: 1) with an interpreter who uses American Sign Language but who has no special knowledge of the material being interpreted, 2) with an interpreter who uses American Sign

Language and has background information prior to the interpreting event, 3) with an interpreter who uses Signed English but has no special knowledge of the material being interpreted, and 4) with an interpreter who uses Signed English and has background information prior to the interpreting event. In specific terms, the research objectives were to:

1. Determine which interpreting condition resulted in the highest level of information received by deaf students and provide a ranking of these conditions.
2. Determine if there were differences in the amount of information received by prelingually and postlingually deaf students under the various interpreting conditions.

Hypotheses

It was hypothesized that under the four interpreting conditions no significant differences in ability to receive information would be found:

1. among deaf students in a regular college setting.
2. between prelingually and postlingually deaf students.

Delimitation

The deaf students and interpreters involved in this study were at CSUN during the academic year 1974-75. Since the students were selected from a regular college where support services for the deaf were provided, the outcome of their performance is limited in direct application to other deaf students. Several sign language systems are employed throughout the United States, but this study focused on the most traditional and prevalent, American Sign Language and Signed English. Therefore, the interpreters and deaf students involved in this study were required to be proficient in the use of both American Sign Language and Signed English. Interpreters were required to have had at least two years of classroom interpreting experience, and participating deaf students had hearing that was nonfunctional for the ordinary purposes of life.

This study was concerned only with the amount of information received by deaf students in various interpreting conditions. It was not concerned with the ramifications of intelligence, receptive language ability, or visual perceptual ability of the students.

Selection of Subjects

Deaf students met the following criteria:

1. A hearing loss, with or without the use of a hearing aid, that precludes the normal reception of spoken conversation, thus requiring an interpreter to follow spoken conversation.
2. A minimum hearing loss of 70 decibels in the better ear.
3. The ability to comprehend American Sign Language and Signed English.

The 40 students who met the criteria were randomly divided into four groups of 10 subjects each.

Each subject viewed two stories presented by the same interpreter, who used a specific method of interpreting. Each subject was treated by being exposed to four different interpreters under the four different interpreting conditions.

Research Design

A counterbalanced design was utilized in this study: if one group happened to be superior to the other groups, each treatment would profit from this superiority. Likewise, if one interpreter happened to be superior to the other interpreters, each treatment would profit from this superiority. After exposing each group involved in the study to all variations of treatment, the differences of the subjects were rotated in order to control the order-of-presentations effects (7).

Materials and Instruments

In order to determine the amount of information received by deaf students under the four interpreting conditions, eight different stories with difficulty ratings between eighth and ninth grade levels, four stories to each grade level, were selected from the Science Research Associates Reading Laboratory IVa, College Preparatory Edition. The two stories presented to a group by the same interpreter, who used a specific method of interpreting, represented two different grade levels. The stories selected were transcribed word-for-word onto audio cassettes. A paper and pencil test of ten multiple-choice questions, some chosen from the SRA questionnaire, was developed for each story. Test scores determined the "amount of information" received by the deaf students.

The SRA Reading Laboratory IVa was designed for students who are able to read beyond the eighth grade level, and this package contained developmental, multi-level (ranging from grade 8.0 to 14.0) learning materials.

Field Procedures

The testing room was a CSUN classroom. The background wall behind the interpreter contained no windows, and all four interpreters wore dark blue smocks. The subjects were seated from six to 10 feet from the interpreter.

At each one-hour session, each of the four groups of 10 subjects viewed two stories presented by the same interpreter under the same interpreting conditions. At each session, the interpreter, using a specific interpreting condition for each

story, interpreted two stories from the audio cassette. When the first story was finished, the subjects took a multiple-choice test based on the story. A maximum of 10 minutes was allowed for testing. The second story presented in the same session began five minutes after collection of the first test. Total observing and testing time for each group of subjects was slightly less than four hours and was completed within a two-week period.

The procedure for supplying background information for certain interpreting conditions was to give the story in printed form to the interpreter in advance. The interpreter could then read the story at his convenience, but must have finished reading the story prior to the interpreting event.

Results

The first hypothesis stated that no significant differences would be found in the ability of deaf students to receive information under four different interpreting conditions. The results of this study support this hypothesis.

When orthogonal contrasts were made in reference to background information and no background information before using American Sign Language and Signed English, respectively, differences still were not significant.

When combining background information and no background information using American Sign Language and Signed English, respectively, the difference between American Sign Language and Signed English was significant at the .05 level. Test results indicated that more information had been received when the interpreters used American Sign Language, whether or not background information had been supplied prior to the interpreting event. Consequently, the null hypothesis of no difference was rejected on the basis of different results obtained using American Sign Language and Signed English.

It is possible, then, to rank the various conditions of sign language interpreting by mean scores. American Sign Language with prior exposure to the material being interpreted had the highest mean score. American Sign Language without any background information prior to the interpreting event ranked second, Signed English with background material ranked third, and Signed English without any background material had the lowest mean score. The two interpreting conditions employing American Sign Language produced higher means, both in the 7-point range, than the two conditions employing Signed English, both in the 6-point range.

The second hypothesis to be tested was that under the four interpreting conditions no significant differences would be found between prelingually and postlingually deaf students in ability to receive information. The difference was found to be significant beyond the .01 level in favor of postlingually deaf students. The mean for postlingually deaf students was 7.52, whereas the mean for prelingually deaf students was 6.81. It should be noted that only nine of the forty subjects selected for the study were classified as postlingually deaf.

The correlation coefficient obtained between the scores of prelingually deaf students on the Michigan Test of English Language Proficiency and Signed English interpretation was -.007, which indicates no significant relationship. Likewise, the correlation between the scores of prelingually deaf students on the Michigan Test and American Sign Language interpretation resulted in a coefficient of .003, which indicates no significant relationship. When American Sign Language and Signed English interpretations for prelingually deaf students were compared, the correlation of .473 was significant at the .01 level of confidence.

The relationship between the scores of postlingually deaf students on the Michigan Test and Signed English interpretation was .83, which is statistically significant. Likewise, the relationship between the score of this group on the Michigan Test and American Sign Language interpretation resulted in a correlation of .71, which is considered to be statistically significant. When American Sign Language and Signed English interpretations for postlingually deaf students were compared, the correlation of .88 was significant.

In order to compare the effectiveness of the four interpreters, a simple analysis of variance was computed. The results showed no significant differences among the four interpreters. The means were almost identical for all four, using all four interpreting conditions. Of interest is one striking similarity in their backgrounds—all were raised by deaf parents whose mode of communication was a conceptual sign language.

An analysis of variance was computed to test differences among the eight stories. One story delivered using Signed English without background information was found to be significantly different (beyond the .01 level) from the other seven stories, although the other story using the same interpreting conditions obtained the highest mean. This was determined through application of the Newman-Keul procedure.

Conclusions

On the basis of the findings, the following conclusions were formulated:

1. The use of American Sign Language, a language that is different from the English language, generated positive influence on the ability of the subjects to receive information about the story from the interpreter, when compared with Signed English interpretation (which is essentially a visual representation of the English language).
2. The higher the level of bilingualism of the deaf student, the greater the amount of information he receives from the interpreter.

Recommendations

1. Because of the higher means found when using American Sign Language interpretation when compared with Signed English interpretation, it is recommended that classroom interpreters make greater use of American Sign Language. Where conceptual exchange between teacher and student is more crucial than proper exposure to language, the interpreter should be increasingly sensitive to the mode of communication that is most comfortable for the deaf student.
2. It is recommended that American Sign Language be required for interpreters-in-training.
3. Because this study appears to be the first of its kind, it is recommended that a longitudinal study be conducted using the four interpreting conditions defined in this study. Further evidence is needed to determine whether the particular condition or sign language system brings greater effectiveness in sign language interpreting. Similar research should be done with deaf subjects at various age levels.
4. It is recommended that this study be replicated with interpreters who were not raised by deaf parents and have not been trained to use American Sign Language.
5. It is recommended that this study be replicated with longer stories, possibly an hour long.
6. It is recommended that a study be undertaken to compare the effectiveness of sign language interpreting with sign language systems other than the two involved in this study.

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The Effects of Ameslan Versus Siglish upon Test Scores

Harry J. Murphy and Lawrence Fleischer

In a study by Fleischer and Cottrell (1) it was found that material interpreted to deaf subjects in a sign language system known as American Sign Language (Ameslan) resulted in significantly higher test scores than material interpreted in another system known as Signed English (Siglish). Subjects for this study were 40 deaf students registered through Campus Services for the Deaf, California State University, Northridge (CSUN). Fant (2) has defined Ameslan (ASL) and Siglish in this way:

> ASL—"It is the sign language used by nearly all (signing) deaf people in the United States. It does not follow the English grammatical scheme and is a wholly different language from English."
>
> Siglish—"Siglish is a sign language that follows the English grammatical system. It is English presented visually on the hands, rather than orally by the voice."

Fant (3) has further explained Ameslan in this way:

> "Ameslan is a legitimate language in and of itself. That is to say, it is not based on English, but stands by itself, on its own feet. If English did not exist, Ameslan could still exist, just as French or Spanish exist independently of English."

The above finding of Ameslan superiority has significance for those who are responsible for the delivery of interpreting services to deaf students in postsecondary institutions, and the training of individuals in sign language and interpreting, including the preparation of media to support training activities.

There are immediate implications for the practices at CSUN, where there are at present two sign language classes in Ameslan, and two interpreting classes which deal with both Ameslan and Siglish. In addition, CSUN is a founding member of the National Interpreter Training Consortium and is responsible for the training of interpreters in nine western states.

Because of current widespread interest in the training of interpreters across the country, it was felt that a second study comparing Ameslan and Siglish might be conducted because (1) the Fleischer and Cottrell study used high school level material, and results might be different if college level material were used, and (2) the first study did not consider the sign language preference (Ameslan or Siglish) of the deaf subjects which could also be a factor in the resulting test scores. It might have been possible, for example, that a predominant number of students preferred Ameslan.

Therefore, it seemed appropriate to conduct a second study which used college level lectures, and which controlled for sign language preference of the deaf consumer before strong conclusions could be drawn regarding:

1) Delivery of interpreter services
2) Sign language and interpreter training

Hypothesis

It was predicted that there would be no significant differences in test scores between those receiving Ameslan treatment versus those receiving Siglish treatment regardless of their stated preference.

Method

Two lectures were scripted and audiotaped by two CSUN professors in their respective areas of expertise. These professors did not know sign language, and no changes were made in the way they would normally deliver a lecture. The lectures were on "Heat Transfer" (approximately 15 minutes) and "Education and Cultural Differences as Reflected in the Education of the Mexican American" (approximately 25 minutes). Each professor constructed a 10-item multiple choice test based on the lecture.

Deaf students enrolled at CSUN during the fall semester of 1975 were invited to participate in this study. All subjects had a better ear hearing loss of $\geq$70dB.

Each deaf student stated a sign language preference on the basis of his preferred "reading" of signs when communicating with deaf friends in a social setting. If a subject indicated equal satisfaction with the two sign language modes, a coin toss determined his inclusion in a research group.

A total of 29 deaf students participated in this study, of whom 16 preferred Ameslan and 13 preferred Siglish.

The Ameslan-preference group (N = 16) was broken into two subgroups (see Figure 1). Half (N = 8) received the two lecture treatments in Ameslan, whereas the other half (N = 8) received the two lecture treatments in Siglish. The Siglish-preference group (N = 13) was also broken into two subgroups, of whom seven received the two lecture treatments in Ameslan, and six received the two lecture treatments in Siglish.

The Siglish treatments were delivered without special endings or plural indicators. Subjects were told that the study had to do with the effects of sign language systems upon comprehension of

lecture material. They were also aware of the specific sign language system that would be used for the lectures in the test situation.

Figure 1.

Preference and Treatment Groups

Preference	Treatment	
	AMESLAN	SIGLISH
AMESLAN	N = 8	N = 8
SIGLISH	N = 7	N = 6

The interpreter* had carefully rehearsed each audiotape prior to the experiment in order to insure strict adherence to the unique syntax of each sign language mode. This person had no knowledge of the test items until after the experiment was completed. The interpreter held the Comprehensive Skills Certificate of competency in interpreting, issued by the national Registry of Interpreters for the Deaf.

In each test situation, the audiotaped lecture on "Education and Cultural Differences as Reflected in the Education of the Mexican-American" lecture preceded the audiotaped lecture on "Heat Transfer." The tape was played at a normal level of sound and rate of speed, and the interpreter interpreted the material as he would in a normal classroom setting, though rendering Ameslan in one case and Siglish in the other. After each lecture, the deaf students took a multiple choice test based on the material presented.

The testing room was a windowless CSUN classroom. The deaf students were seated in two rows of a semi-circle approximately 8 to 12 feet from the interpreter.

Data were subjected to a 2 X 2 analysis of variance. The independent variables of (1) sign language preference and (2) sign language treatment were analyzed against the combined test scores of the two lectures. Homogeneity of variance among samples was confirmed by several tests.

Findings and Discussion

There were no statistically significant differences regardless of preference and no statistically significant differences regardless of treatment received. In other words, those who preferred Ameslan and received Siglish did as well as those who preferred Ameslan and received Ameslan. Those who preferred Siglish and received Ameslan did as well as those who preferred Siglish and received Siglish. Nor were there statistically significant differences attributed to the relationship between "treatment" and "preference."

*The interpreter was Louie J. Fant, Jr., whose writings citing the distinctions between the two sign language systems are quoted elsewhere in this study.

Table 1.

Mean Scores by Treatment, Preference, and Lecture

Treatment	Preference	Education of Mexican-American $\bar{X}$	Heat Transfer $\bar{X}$	Combined $\bar{X}$
Siglish	Siglish	4.71	5.57	10.28
Siglish	Ameslan	4.25	4.25	8.50
Ameslan	Siglish	4.50	5.66	10.16
Ameslan	Ameslan	5.87	5.50	11.37

While Table 1 indicates that higher mean scores were obtained from the Ameslan treatment, the difference between Ameslan and Siglish means did not reach a level of statistical significance (See Table 2).

Table 2.

Analysis of Data by Main Effects and Interaction Effects

Source of Variance	SS	df	MS	F	*p*
Main Effects					
A. Treatment	17.09	1	17.09	2.09	.16
B. Preference	0.89	1	0.89	.11	.99
Interaction Effect (AXB)	16.02	1	16.02	.20	.18

The present study failed to confirm the superiority of either sign language system. An analysis of the data clearly shows that preference for a system has no relationship to the scores obtained.

Of concern are the relatively low mean scores obtained in this study. In the Fleischer and Cottrell study, mean scores fell in the 6.6-7.4 range (out of a possible 10 correct) for high school material. In this study, with college level material, mean scores fell in the 4.3-5.9 range. These scores seem to confirm that college level material is more difficult than high school level material. Some considerations to explore before drawing strong conclusions about this are the content of the material and the nature of the questions based on it. Clearly, this is an area worthy of further research.

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ATTITUDES OF CSUN PROFESSORS AND HEARING STUDENTS

Perceptions of Hearing Students and Faculty Toward Hearing-Impaired Students

Kenneth D. Randall

Several researchers have attempted to determine the effectiveness of integrated programs for the hearing-impaired. However, little has been done to determine what benefits, if any, a hearing student derives from an educational experience with a hearing-impaired classmate. In addition, the majority of the research regarding the benefits to the hearing-impaired has been conducted by personnel directly involved with the implementation of the integrated program and is consequently very subjective.

However, Dr. E. R. Stuckless reported on a study conducted in 1971 at the National Technical Institute for the Deaf (NTID). His report summarizes research studies focusing on the assimilation of deaf NTID students into the total Rochester Institute of Technology community. Stuckless prefers the word "assimilation" to "integration" because he feels that it is more appropriate in terms of conceptualizing the potential relationships between deaf and hearing students. The results of the study by Stuckless indicate:

1. Success in assimilation depends on such factors as aptitudes, motivation, and educational background of the deaf student, selection and scope of supportive services, and acceptance of the deaf student by the professor.
2. Students at NTID state preference for integrated classes taught by RIT professors with hearing students when given the choice between integrated situations and special classes taught by NTID professors with only hearing-impaired classmates.
3. The social attitudes of the deaf students, which were initially different from those of the RIT students, began to show a change as the deaf students began to adopt the attitudes of the hearing students as a result of their associations.
4. Patterns of interaction between NTID students and hearing students did not change significantly as a result of the shared learning experience, suggesting that the presence of hearing students in an integrated setting does not automatically bring about interaction (4).

Stuckless also reports that impressive numbers of normal-hearing students volunteered for a 13-week non-credit course in manual communication and that 10 hearing students applied for the student interpreter training program at NTID in 1971.

L. Ronald Jacobs conducted a survey at San Fernando Valley State College in 1971 pertaining to the "Attitudes of Normal Hearing College Students Toward Their Hearing-Impaired Classmates" (2).

Jacobs concludes: "This study indicates that normal-hearing college students who are matriculating with hearing-impaired students are benefiting from the experience. The integrated experience seems to be enriching the total education by adding another facet. Attitudes in general are quite positive and normal-hearing students appear to be supportive of this trend in special education" (2).

Objectives of the Study

The objective of this study is to determine how hearing students and faculty members perceive a hearing-impaired student as a learner in an integrated program. The evaluation pertains to the following:

1. Attitudes regarding employment opportunities for the deaf.
2. Attitudes regarding the presence of hearing-impaired students in class.
3. The impact of the hearing-impaired student on instructor methodology.
4. The impact of the interpreter on a classroom environment.
5. Attitudes regarding the level of assistance given by the faculty to the hearing-impaired student.
6. Attitudes regarding the degree of participation in class activities by the hearing-impaired student.
7. Attitudes regarding acceptance of the hearing-impaired by:
   a. Hearing students
   b. Faculty members

Design of the Questionnaire

As noted earlier, the evaluation of benefits either to hearing or hearing-impaired students who participate in an integrated program has been conducted by researchers involved with the program itself, and is, therefore, largely subjective. It is sometimes preferable to enlist an outside agency for evaluative services regarding the effectiveness of a program.

This researcher worked in conjunction with the Eckman Center, a professional management and evaluation firm based in Woodland Hills, California, to develop a questionnaire for hearing students and faculty members that would measure the impact of the integrated postsecondary program at CSUN. This firm has been involved

previously in numerous studies and projects for the Center on Deafness at CSUN and other educational agencies throughout the State of California.

The completed questionnaires address themselves to the objectives given for this project and obtain some background information on the individuals completing the questionnaires.

Description of the Sample

The sample used for this study represents faculty members who taught and hearing students who were enrolled in classes with hearing-impaired students during the spring semester of 1973 at CSUN. The number of classes in which hearing-impaired students were enrolled totaled 162, and approximately 120 hearing-impaired students took classes with 4,414 hearing students at an urban college of approximately 25,000 students, which is part of the California State College and University system.

The Eckman Center determined that an adequate sample for a study of this type would require sending the questionnaire to 75 faculty members and 200 students. The questionnaires were mailed to students and faculty members. Completed questionnaires were returned by 67 students or 33 percent of the student sample of 200. Thirty-three completed questionnaires were returned by faculty members, which represented 44 percent of the faculty sample of 75.

Summary of Student Questionnaire

1. Students do not indicate a significant difference in their attitudes toward support of blind, deaf, or orthopedically handicapped students.
2. Students have an increased awareness of hearing impairment as a handicap.
3. Students perceived the hearing-impaired student as being about average in terms of education and academic skills.
4. Students seem to have the opportunity for contact with hearing-impaired students in an academic setting.

Summary of Faculty Questionnaire

1. There does not appear to be significant change in the presentation of instructional content to a hearing-impaired student.
2. There is not a significant difference in the manner in which hearing-impaired students and hearing students demonstrate their learning or practice skills they have acquired.
3. The presence of a hearing-impaired student did not result in making the course more individually tailored or responsive to individual student needs.
4. Hearing-impaired students did not appear to participate as frequently as hearing students in an instructional role.
5. Hearing students in an instructional role tended to accommodate the needs of hearing-impaired students to a greater extent than the faculty members.
6. The majority of the faculty felt that hearing-impaired students were inferior to hearing students in terms of educational background and ability to generalize.
7. Faculty members tend to view the hearing-impaired student as having inferior skills in written expression, but superior study habits.
8. A large percentage of the faculty felt that the academic interest of the hearing-impaired student was superior to that of the hearing student.
9. Faculty members indicate support of the deaf as third in terms of priority among the blind, deaf, and orthopedically handicapped.
10. Most faculty members felt that deaf students would have benefited from tutoring.
11. Faculty members believed that hearing students accepted the presence of a hearing-impaired student in the class.
12. Few hearing-impaired students took advantage of tutoring assistance.

Comparison of Faculty and Student Responses

1. The perceptions of the faculty and students regarding the educational and academic ability of hearing-impaired students indicated a significant difference.

Table 1. Attitudes Regarding Education and Academic Ability of Hearing-Impaired Students

	Students	Faculty
Educationally and Academically Superior	14.5%	22.16%
Educationally and Academically Equal	83.6%	50.02%
Educationally and Academically Inferior	1.8%	27.82%

2. The faculty tended to rate the hearing-impaired person higher than hearing students in terms of academic interest, yet lower in terms of academic ability.
3. The need of support for deaf persons as a handicapped group was shown more by the students than the faculty.
4. Faculty members and students both indicated that hearing-impaired students could benefit from tutoring opportunities.
5. Both faculty and students showed a favorable attitude toward hearing-impaired students.

Recommendations and Conclusions

1. It is recommended that more hearing-impaired students be integrated with hearing students to determine if the integrated environment results in a more favorable perception of hearing impairment.
2. It is recommended that more emphasis be placed on developing skills of generalization, abstraction, and written expression throughout the educational experience of hearing-impaired students.
3. It is recommended that more information be made available concerning the existence of tutorial assistance for hearing-impaired students and that hearing-impaired students should take greater advantage of the existing tutorial opportunities.

The writer concludes that the results of this study substantiate the previous findings of Stuckless (4) and Jacobs (2) concerning the opportunities for integrated education for hearing-impaired students. Respondents tended to have favorable attitudes towards the hearing-impaired student and did not feel that the hearing-impaired student posed a problem within the academic environment.

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Attitudes of Normal-Hearing College Students Toward Their Hearing-Impaired Classmates

L. Ronald Jacobs

When considering an integrated program, the educator is obligated to examine it from several different perspectives. Not only is the hearing-impaired student to be considered, one must also look at the effects on the normal-hearing student. How does the normal-hearing student feel about sharing classes with hearing-impaired people? Does the normal-hearing student feel he is "short-changed" because he perceives special allowances are made to his hearing-impaired classmate? Does he find that the education he formerly received was devalued in some way through this integration process, or does he feel that he has reaped an additional educational dividend as a result of having shared an experience with a hearing-impaired person? What happens to the attitudes and perconceived notions about hearing-impaired people after the normal-hearing person has had an opportunity to matriculate with hearing-impaired people and share their experiences?

Very little attention has been given to the assessment of attitudes of normal-hearing college students toward their hearing-impaired classmates. Most investigations of integrated classroom situations focus on attitudes of the hearing-impaired student. In addition, most assessments of integrated situations have been conducted where the hearing-impaired student has been quite proficient in receptive and expressive oral communication and requires minimal support services. This is not entirely congruent with the situation at San Fernando Valley State College, where many of the hearing-impaired students are unable to communicate orally and must rely on manual communication interpreters.

The purpose of this study is to evaluate the attitudes of normal-hearing college students who attend classes with hearing-impaired college students. The respondents were evaluated in the following areas:

1. Their opinions of the academic capabilities of hearing-impaired students.
2. Their feelings about sharing the classroom with hearing-impaired students and the implications of special services such as extra attention on the teacher's part, interpreting services, and note-taking services.
3. Their attitudes about the social adjustment of hearing-impaired students and an indication of any attempts to socialize with hearing-impaired students.
4. Their attitudes or conceptions of hearing-impaired people prior to this experience and possible changes in attitudes that may be attributable to this experience.

Design of the Questionnaire

The questionnaire was designed to ascertain information in the following categories:

1. Background information about the respondent.
   a. Part- or full-time student status, subject area major, or classes attended with hearing-impaired students.
   b. Any relatives, friends, or associates with hearing impairments known prior to this experience.
2. Feelings about the academic capability of hearing-impaired classmates.
3. Feelings about the presence of hearing-impaired people in the respondent's classroom.
4. Indication of attempts to communicate with hearing-impaired classmates.
5. Opinion of the social maturity of hearing-impaired classmates.
6. Indication of a desire to help or attempt to help hearing-impaired people.
7. Attitudes about hearing-impaired people as felt prior to and after attending class with hearing-impaired students.

Description of the Sample

Fifty-four respondents completed and returned this questionnaire. The respondents represent three different classes: History 270, History 271, and Political Science 155. All three classes were assigned manual communication interpreters. The number of hearing-impaired students in each class was as follows:

Class	No. of Hearing-Impaired Students
History 270	1
History 271	3
Political Science 155	4

All respondents had previously attended at least one class with hearing-impaired students for at least one semester.

Distribution and Return of the Questionnaire

All questionnaires were distributed and returned on June 4, 1971. The interviewer stood outside the designated classrooms for 30 minutes prior to the start of each lecture. As a normal-hearing student approached the classroom, the interviewer asked the student's cooperation in completing and returning the form. All were told that it was strictly a voluntary activity. Twenty question-

naires were distributed in each of the three classes to the first 20 people in each class who consented to complete and return them. Sixty people agreed and three people declined. Those 60 who consented were told by the interviewer that the questionnaires would be collected in the hallway after the lecture was finished.

After the lectures were finished, the interviewer collected a total of 54 questionnaires. It was not determined why the other six respondents failed to return their questionnaires.

Tabulation and Analysis of Survey Data

All responses from the 54 completed questionnaires were transferred into numerical form and placed on IBM "80-80" sheets. The data from these sheets were transferred onto 54 separate IBM computer cards. By using an IBM card sorter it was possible to tabulate and cross-tabulate the response items.

A Straight Tabulation of the Survey Data

The following is a partial report of the straight tabulation of information obtained from each item of the 54 completed questionnaires. The question numbers below correspond with the number of the questionnaire item.

1. How many units are you taking this semester?
2. Indicated major field of study.
3. Do you have any relatives with a hearing impairment? If yes, please state relationship and degree of impairment.
4. Prior to coming to SFVSC did you have any hearing-impaired acquaintances other than relatives? If yes, indicate relationship. What was the degree of hearing impairment?
5. Is this the first semester you attended classes with hearing-impaired students?
6. What is the name of the class you attended with hearing-impaired students?
7. Which of the following statements do you think is most accurate?

The hearing-impaired students. . .	No. of People
a) Seem to do better academically	3
b) Seem to do as well academically	44
c) Do not seem to do as well academically	3
d) No response	3
e) Other response	1

8. Which of the following statements seems most accurate?

a) The professor makes some allowances for the hearing-impaired students.	9
b) The professor treats them the same.	45
c) The professor gives them less attention.	0
d) No response	0
e) Other response	0

9. In comparing your hearing-impaired classmates to the majority of normal-hearing students, which do you think would be most accurate?

a) Seems well prepared for class	21
b) Seems adequately prepared for class	29
c) Seems poorly prepared for class	1
d) No response	2
e) Other response	1

10. If you were asked to take notes for a hearing-impaired person in your class. . .

a) I would be happy to, easy way to help	26
b) I would be happy to, might be to my academic advantage	2
c) I would do it if it did not hurt my academic progress	16
d) I would probably not	6
e) No response	2
f) Other response	2

11. Which of the following statements most accurately describes your feeling about interpreters?

a) Their presence contributes to my learning experience	18
b) Their presence is annoying at times.	1
c) No positive or negative feelings.	35
d) No response	0
e) Other response	0

12. Which of the following statements most accurately describes your feelings about having hearing-impaired students in your class?

a) Their presence enhances the learning experience.	7
b) Their presence hinders the learning experience.	5
c) Their presence has no noticeable effect on the learning experience.	41
d) No response	1
e) Other response	0

13. Which of the following statements most accurately describes your professor's personal feelings. . .

a) The presence of hearing-impaired students enhances the learning experience.	7
b) The presence of hearing-impaired students hinders the learning experience.	5
c) The presence of hearing-impaired students has no noticeable effect.	41
d) No response	1
e) Other response	0

14. Did you have occasion to personally communicate with the hearing-impaired students in your class?

a) Yes	17
b) No	34
c) No response	2
d) Other response	1

If yes, how did you attempt to communicate?

a) I spoke.	11
b) I wrote.	2
c) I used signs and gestures.	2
d) I spoke and wrote.	1
e) I spoke, used signs and gestures.	3
f) I wrote, used signs and gestures.	1
g) I wrote, spoke, used signs and gestures.	0
h) No response	34
i) Other response	0

15. Did your hearing-impaired classmates ever attempt to communicate with you?

a) Yes	3
b) No	15
c) No response	36
d) Other response	0

If yes, how did he attempt to communicate?

a) He spoke.	10
b) He wrote.	2
c) He used signs and gestures.	1
d) He spoke and wrote.	0
e) He spoke, used signs and gestures.	3
f) He wrote, used signs and gestures.	0
g) He spoke, wrote, used signs and gestures.	1
h) No response	37
i) Other response	0

16. Have you ever taken college courses about the education of the hearing-impaired?

a) Yes	2
b) No	51
c) No response	1
d) Other response	0

17. Has being in the class motivated you to take college courses about the education of the hearing-impaired?

a) Yes	2
b) No	51
c) No response	1
d) Other response	0

18. Have you ever felt a desire to help hearing-impaired people?

a) Yes	36
b) No	17
c) No response	1
d) Other response	0

Is your decision a result of your experience at SFVSC?

a) Yes	17
b) No	28
c) No response	6
d) Other response	3

19. Can you name specific ways in which you helped or tried to help hearing-impaired people?

a) Yes	13
b) No	32
c) No response	9
d) Other response	0

If yes, please describe briefly.

a) Learned sign language and helped interpret	1
b) Tried to interpret orally to clarify statements	1
c) Used manual alphabet with hearing-impaired campers	1
d) Worked with hearing-impaired hospital patients	1
e) Helped teach a class of hard-of-hearing students	1
f) Worked in a cafeteria with hearing-impaired students, slowed my speaking rate and enunciated	1
g) Took notes on class lectures	4
h) Saying "Hi"	1
i) Helping out on a friendly basis	1
j) Donated money to hearing-impaired and helped in a store by writing notes	1
k) No response	1
l) Other response	0

If yes, how were your intentions received?

a) Favorably	5
b) Very favorably	5
c) Very favorably, made a friend	1
d) No appreciation nor resentment	1
e) Mutual response, tried to return favor	1
f) No response	41
g) Other response	0

20. If your attempts to help hearing-impaired people were not well received, did this discourage you from making further attempts to help?

a) Yes	0
b) No	18
c) No response	35
d) Other response	1

21. Have you attempted to socialize with hearing-impaired students?

a) Yes	8
b) No	36
c) No response	10
d) Other response	0

If yes, indicate which statement seems most accurate.

a) The attempt was satisfying.	9
b) The attempt was not satisfying.	1
c) No response	44
d) Other response	0

If not, what do you think prevented satisfaction?

a) The hearing-impaired students were not interested.	1

b) The situation made me feel timid. 4
c) The hearing-impaired students seemed odd to me. 0
d) We could not communicate. 1
e) Not enough time or opportunity to get acquainted. 10
f) Other (Explain) 3
(1) I have not run into them.
(2) They just come into class and communicate with each other with limited attempts to talk to others.
(3) I was afraid I could not make them understand me.

22. If you have become acquainted with students outside of the classroom, in which of the following situations did this occur?

a) Dormitory or apartment building 5
b) In campus or club activities 4
c) Introductions through interpreters 0
d) Introductions through notetakers 0
e) Other (specify) 6
(1) Say "Hi" on campus
(2) Continuing friendly relationships established in junior and senior high school
(3) A deaf student spoke to my education class.
(4) Camping experience
(5) Introduced by a friend
(6) Religious work

23. Which of the following statements seems most accurate?

The hearing impaired at SFVSC. . .

a) Seem more friendly than the normal-hearing students. 12
b) Are as friendly as the normal-hearing students. 37
c) Do not seem as friendly as the normal-hearing students. 2
d) No response 3
e) Other response 0

24. Which of the following statements most accurately describes your feelings about sign language?

a) Appears quite attractive, I wish I knew it. 39
b) Appears quite attractive, I already know some. 9
c) Appears unattractive. 3
d) No response 2
e) Other response 1

25. Do you think that SFVSC is an appropriate place for hearing-impaired students?

a) Yes 50
b) No 0
c) No response 2
d) Other response 2

26. If you were hearing impaired, would you attend SFVSC?

a) Yes 43
b) No 4
c) No response 2
d) Other response 5

27. Do you perceive the hearing-impaired students at SFVSC equal to you as a college student in the areas of:

a) Intelligence:	Yes	49
	No	0
	No response	5
	Other response	0
b) Academic ability:	Yes	48
	No	1
	No response	5
	Other response	0
c) Social status:	Yes	41
	No	6
	No response	6
	Other response	1

28. Do you feel that the general hearing-impaired population is equal to the general normal-hearing population in the areas of:

a) Intelligence:	Yes	41
	No	8
	No response	4
	Other response	1
b) Social status:	Yes	23
	No	24
	No response	5
	Other response	2

The following questions relate to attitudes you had prior to attending classes with hearing-impaired students and the attitudes you have now as a result of this experience.

1. As a single person would you date or have you dated a hearing-impaired person?

Before		Now	
a) Yes	23	a) Yes	33
b) No	26	b) No	15
c) No response	3	c) No response	3
d) Other response	2	d) Other response	3

2. Would you be in favor of your own child's desire to date hearing-impaired people?

Before		Now	
a) Yes	32	a) Yes	39
b) No	16	b) No	8
c) No response	4	c) No response	4
d) Other response	2	d) Other response	3

3. Would you employ a hearing-impaired person?

Before		Now	
a) Yes	43	a) Yes	48
b) No	4	b) No	0
c) No response	4	c) No response	4
d) Other response	3	d) Other response	2

4. Would you work for a hearing-impaired person?

Before		Now	
a) Yes	45	a) Yes	49
b) No	3	b) No	0
c) No response	5	c) No response	4
d) Other response	1	d) Other response	1

5. I thought/think that almost all hearing-impaired people could understand normal hearing people through lipreading.

Before		Now	
a) Yes	35	a) Yes	28
b) No	14	b) No	20
c) No response	3	c) No response	3
d) Other response	2	d) Other response	3

6. I thought/think that almost all hearing-impaired people could learn to speak clearly.

Before		Now	
a) Yes	12	a) Yes	20
b) No	37	b) No	29
c) No response	4	c) No response	4
d) Other response	1	d) Other response	1

7. I thought/think that almost all hearing-impaired people have the same language and reading ability as normal-hearing people.

Before		Now	
a) Yes	26	a) Yes	34
b) No	23	b) No	15
c) No response	4	c) No response	4
d) Other response	1	d) Other response	1

8. I thought/think that almost all hearing-impaired people are more suspicious than Normal-hearing people.

Before		Now	
a) Yes	6	a) Yes	5
b) No	40	b) No	41
c) No response	6	c) No response	6
d) Other response	2	d) Other response	2

9. I thought/think that almost all hearing-impaired people are more "clannish" than normal-hearing people.

Before		Now	
a) Yes	10	a) Yes	14
b) No	35	b) No	32
c) No response	6	c) No response	5
d) Other response	3	d) Other response	3

10. I thought/think that almost all hearing-impaired people are less mature than normal-hearing people.

Before		Now	
a) Yes	1	a) Yes	1
b) No	46	b) No	46
c) No response	4	c) No response	4
d) Other response	3	d) Other response	3

A Cross-Tabulation of Survey Data

The following data represent a cross-tabulation of information obtained from two or more questionnaire items. Each cross-tabulation will be preceded by an explanatory note. All percentages listed are rounded off to the nearest per cent. The writer divided the responses to the two questions in number 18 into the following categories:

Table 1

Have you ever felt a desire to help hearing-impaired people?		Is this decision a result of your experience at SFVSC?	
A. Yes	36	Yes	16
		No	17
		No response	3
B. No	17	Yes	1
		No	10
		No response	6

The writer concludes that 16 people, or 30 per cent of those questioned, were motivated to help hearing-impaired people as a result of the integrated experience. One person, or two per cent of those questioned, indicated that the integrated experience influenced him to refrain from helping. The other 64 per cent of those questioned probably experienced no change in attitude. The same respondent who indicated he had no desire to help as a result of his experience at SFVSC also indicated that the professor made special allowances for the hearing-impaired students (question 8) and the professor probably felt the hearing-impaired students were hindering the learning experience (question 13). The respondent's negative attitude change may be related to the fact that he feels cheated by the diversion of the professor's attention to a "special" group of students.

In reference to questions 11 and 12, the same person who found the interpreter "distracting at times" is the same person who thought that the presence of hearing-impaired people in class hindered the learning experience.

In reference to questions 8 and 13, three of the five people who thought the professor felt the hearing-impaired students hindered the learning experience were also three of the group of nine students who felt that the professor made special allowances for the hearing-impaired students.

The questions that appear in Table 2, following, determine areas of attitude changes resulting from exposure to the integrated program. Value judgments have been assigned to some questions by the writer to denote "positive changes" and "negative changes" of attitude in the tables below. (These figures represent only those people who had an attitude change. Those respondents who had the same "before" and "now" responses have been deleted from the tables.)

Table 2

1. As a single person would you date or have you dated a hearing-impaired person?

Before	Now	Type of Attitude Change	No. of People
Yes	No	Negative	0
No	Yes	Positive	10

Note: This indicates that ten people experienced a positive attitude change due to their participation in the integrated program.

2. Would you be in favor of your own child's desire to date hearing-impaired people?

Before	Now	Type of Attitude Change	No. of People
Yes	No	Negative	0
No	Yes	Positive	7

3. Would you employ a hearing-impaired person?

Before	Now	Type of Attitude Change	No. of People
Yes	No	Negative	0
No	Yes	Positive	4

4. Would you work for a hearing-impaired person?

Before	Now	Type of Attitude Change	No. of People
Yes	No	Negative	0
No	Yes	Positive	3

5. I thought/think that almost all hearing-impaired people could understand normal-hearing people through lipreading.

Before	Now	No. of People
Yes	No	9
No	Yes	2

6. I thought/think that almost all hearing-impaired people could learn to speak clearly.

Before	Now	No. of People
Yes	No	5
No	Yes	13

7. I thought/think that almost all hearing-impaired people have the same language and reading ability as normal-hearing people.

Before	Now	No. of People
Yes	No	11
No	Yes	2

8. I thought/think that almost all hearing-impaired people are more suspicious than normal-hearing people.

Before	Now	Type of Attitude Change	No. of People
Yes	No	Positive	2
No	Yes	Negative	1

Note: The respondent who indicated a negative attitude change (question 8 above) also indicated that the interpreter's presence in class was annoying (question 1) and the presence of hearing-impaired students hindered the learning experience (question 12).

9. I thought/think that almost all hearing-impaired people are more "clannish" than normal-hearing people.

Before	Now	Type of Attitude Change	No. of People
Yes	No	Positive	4
No	Yes	Negative	8

10. I thought/think that almost all hearing-impaired people are less mature than normal-hearing people.

Before	Now	Type of Attitude Change	No. of People
Yes	No	Positive	1
No	Yes	Negative	1

Table 3

Total Number of Attitude Changes = 41
Number of Positive Changes = 31
Number of Negative Changes = 10

The design of the questionnaire leaves a fairly narrow range of possible opinions to express. Usually three choices are available, which represent the two extremes and a middle-of-the-road response. Respondents chose the middle-of-the-road response with consistently higher frequency than the other two. On the basis of the pretest results, the writer chose the present format, concluding that when a respondent did indicate an extreme opinion, this response represents his feelings quite validly.

The means of distributing the questionnaire requires evaluation from several different aspects:

1. Since response was voluntary, this sample cannot really be regarded as random. Possibly those three people who declined and those six who failed to return the questionnaire might have expressed negative feelings.
2. Respondents may have felt pressured to answer the items in a "socially acceptable" manner. Society places a value judgment on how an individual feels about handicapped people and minority groups.
3. Respondents may have felt pressured to answer the items in a manner that would reflect an open mind about this topic, since they knew the interviewer was in close proximity and would be collecting the questionnaires shortly.
4. The questionnaire does not require the respondent's name in order to solicit more frank and honest responses. The respondents may not, however, have felt secure about anonymity, since they personally had to return the completed questionnaire to the interviewer.
5. The respondents were completing the questionnaire in rooms in which there were hearing-impaired persons present, and this might have influenced the responses.

Several factors which might have influenced the responses are listed above. There are probably many other factors which are not listed. It is accepted by the writer that the responses listed represent the true feelings of the 54 students interviewed and that the above-mentioned factors operated to a minimal extent.

The 54 people interviewed are typically full-time students representing a wide variety of fields of study. A small percentage had known hearing-impaired people prior to attending the integrated programs at San Fernando Valley State College, and many of these contacts were somewhat remote. For the most part, the students had spent exactly one semester in the integrated situation. A few students had been in one or two other integrated classes prior to this experience.

The respondents viewed their hearing-impaired classmates as a group of academic peers, quite well prepared for class, who received a little extra help from the professor at times.

The respondents typically made few attempts to communicate with their hearing-impaired classmates, and the latter responded similarly. The largest percentage of those who attempted to communicate used oral communication.

Question 16 has significance because it indicates that exposure of this nature could have the beneficial effects of generating interest in the field and bringing new talent into the area of the education of the hearing impaired.

Althcugh several respondents expressed the desire to befriend and help hearing-impaired students, it can be seen from questions 20 and 21 that very little social contact was established. Additional opportunities or more time is needed to establish solid relationships. The classroom is not the place where these relationships are usually established. Questionnaire responses indicate that the dormitory and club activities are effective in this area.

It is significant that nine of the 54 respondents have acquired some sign language capability. It probably can be attributed to the student's exposure to his hearing-impaired peers. Forty-eight of the 54 respondents feel that sign language is "attractive." This fact tends to conflict with the idea held by those educators of the deaf who insist that sign language is unattractive and will work to the social detriment of those hearing-impaired people who use it.

The respondents evidently feel that hearing-impaired students have the same social status as normal-hearing students and are just as capable in the academic area. It must be remembered that the hearing-impaired students at San Fernando Valley State College have a high degree of academic superiority compared to most hearing-impaired persons.

The writer was quite interested to see that an appreciable percentage of the respondents would agree to date or have their children date hearing-impaired people. In fact, responses to a series of 10 questions on the questionnaire represent a considerable attitude change in a positive direction. This change is largely attributable to the effects of the integrated program.

Questions 5, 6 and 7 were of special interest. A high number of respondents indicated that in general a hearing-impaired person could read as well as normal-hearing people when, in fact, the area of language and reading represents the biggest problem for the hearing-impaired person. Perhaps the fact that the respondents were evaluating the "cream" of the hearing-impaired population was accountable for this opinion.

Regarding communication, it seems that the respondents were more favorably impressed with the hearing-impaired students' expressive than receptive oral ability.

This study indicates that normal-hearing college students who are matriculating with hearing-impaired college students are benefiting from the experience. The integrated experience seems to be enriching the total education by adding another facet. Attitudes in general are quite positive, and the normal-hearing students appear to be supportive of this trend in special education.

Students apparently reformulated some of their values and judgments about hearing-impaired people. In almost all cases these value changes would be regarded as positive ones.

Educators of the deaf are searching for means to increase postsecondary educational opportunities for hearing-impaired people. The factor of economic feasibility is a key one in making programs available. A tenable alternative is to use existing facilities which were originally intended for normal-hearing people only. If this is the course to be pursued, educators must consider the effect of such a program on the normal-hearing students as well as other factors.

The writer concludes from this study that the normal-hearing students certainly are not deprived in an integrated situation. In fact, it appears that the integrated program adds value to their total educational experience.

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Some Effects of Association with Hearing-Impaired Students upon Hearing Students at CSUN

Sharon H. Carter

At California State University, Northridge (CSUN), approximately 25,000 hearing students share the college experience with about 150 hearing-impaired individuals. Some of these hearing individuals have had classes with hearing-impaired students. Others have not.

Clearly, one aspect of a rewarding college experience is the development of positive peer relationships. In an "integrated" situation where hearing-impaired individuals attend regular classes with hearing students, the question might be asked: To what degree does this contact and interaction influence the attitudes of hearing students toward hearing-impaired students? Another question of equal interest is: To what degree are hearing students more knowledgeable about hearing-impaired individuals as a result of having shared classes with them?

Hypothesis

The general hypothesis under consideration in this study was that hearing students jointly enrolled with hearing-impaired students would evidence a more favorable attitude toward hearing-impaired persons, and would be more knowledgeable about them than those not jointly enrolled.

Methodology

A questionnaire containing 30 statements dealing with attitudes and knowledge was devised and distributed to hearing students on the CSUN campus. From returned questionnaires, two groups of hearing students were identified:

(1) JOINTLY ENROLLED—those hearing students who were currently enrolled (spring semester, 1975) or who had been previously enrolled in classes with hearing-impaired students (N = 195).

(2) NOT JOINTLY ENROLLED—those hearing students who had never been enrolled in classes with hearing-impaired students (N = 92).

For each of 30 statements respondents were asked to agree or disagree. There was also a "no opinion" option.

Data were then analyzed using a 2 X 2 contingency table. The chi square statistical technique was employed. The Yates correction for continuity and Fisher's exact test were applied as warranted.

Findings and Discussion

Significant differences between the two research groups were found, with confidence levels of $> .01$ for eight of the 30 statements. These eight statements were:

1. Hearing-impaired persons in America have equal access to higher education in each of the 50 states.

	Disagree	Agree	
JOINT	115	11	$\chi^2 = 8.74$
NOT JOINT	34	13	$p = .003$

2. Contact with hearing-impaired persons has challenged and stimulated my personal growth.

	Disagree	Agree	
JOINT	6	148	$\chi^2 = 10.75$
NOT JOINT	9	36	$p = .001$

3. I have gained social contact that I otherwise would not have had because of my acquaintance with a hearing-impaired person.

	Disagree	Agree	
JOINT	26	115	$\chi^2 = 12.39$
NOT JOINT	20	23	$p = > .001$

4. My contact with hearing-impaired persons has broadened my career possibilities.

	Disagree	Agree	
JOINT	37	110	$\chi^2 = 20.57$
NOT JOINT	25	13	$p = > .001$

5. I know (or am learning) sign language.

	Disagree	Agree	
JOINT	43	118	$\chi^2 = 47.26$
NOT JOINT	51	15	$p = > .001$

6. My role as a future employer, coworker, service agent, government or civic employee will be affected because of my contact with hearing-impaired individuals at CSUN.

	Disagree	Agree	
JOINT	23	122	$\chi^2 = 41.74$
NOT JOINT	33	18	$p = > .001$

7. I am at a disadvantage because I do not know how to communicate with hearing-impaired persons.

	Disagree	Agree	
JOINT	103	67	$\chi^2 = 22.14$
NOT JOINT	23	59	$p = > .001$

8. I would consider myself capable of functioning as a potential "advocate" for hearing-impaired persons and programs for the hearing-impaired because of my contact with them.

	Disagree	Agree	
JOINT	37	116	$\chi^2 = 20.41$
NOT JOINT	31	21	$p = > .001$

From the data reported above it is evident that jointly enrolled students do not perceive hearing-impaired students as having equal access to higher education throughout America (statement 1). Since those not jointly enrolled responded to that statement in a different way, this knowledge may have been gained through classroom discussions prompted by the presence of a hearing-impaired student in the same class and/or personal contact in or out of the classroom.

Jointly enrolled hearing students believe that contact with hearing-impaired persons contributed to their personal growth (statement 2), and that classroom contact led to social contact (statement 3). It appears also that as a result of classroom contact, hearing students consider career opportunities associated with the hearing-impaired (statement 4). In a subjective observation, many of the interpreters employed by CSUN, as well as hearing students enrolled in teacher preparation courses for the deaf, report that they first became interested in a career working with the hearing-impaired as a result of having such persons in one or more of their classes.

It appears also that as a result of contact with hearing-impaired students, hearing students are prompted to learn sign language in order to communicate with them (statement 5).

Statement 6 assumes that hearing individuals have a *positive* attitude about functioning as a future employer *of the hearing-impaired*, coworker, service agent, or government or civic employee as a result of contact at CSUN. Considering the employment problems many hearing-impaired individuals face, it would appear that integrated postsecondary educational settings give hearing peers the opportunity to see the employment capabilities of hearing-impaired persons.

Those jointly enrolled do not perceive that they are at a disadvantage in communicating with hearing-impaired persons (statement 7). This may be so (1) because they see that hearing-impaired individuals are capable of communicating adequately through an interpreter, speech or speechreading, notes, or other means, and (2) because of their greater knowledge about deafness, these hearing students feel they are capable of communicating with their hearing-impaired classmates.

Jointly enrolled hearing students see themselves capable of functioning as a potential "advocate" of hearing-impaired persons as a result of contact with them (statement 8). Again, it appears that joint enrollment results in an understanding of the problems of the hearing-impaired and an apparent willingness to act on their behalf.

The reader will note that for each of the eight questions some hearing students who were not jointly enrolled were responding as though they had some contact with hearing-impaired students. For example, a few were learning sign language. This may be considered an indication of the high degree to which hearing-impaired students at CSUN are visible throughout the university community. Those hearing students who are not jointly enrolled may see hearing-impaired students in the library, the cafeteria, and other places on campus and may have become interested in that manner.

Conclusions and Recommendations

This article is derived from a longer report (Carter, 1975) and was originally designed as a requirement for a master's degree at CSUN. It is recognized that the study would have benefited from stricter methodological controls, more carefully defined terms, and more specific wording in some statements, particularly in statements 6 and 8.

These statements are particularly intriguing in terms of the seemingly concrete ways in which hearing persons appear ready to function as employers and "advocates" of hearing-impaired persons as a result of joint enrollment.

In summary, it is concluded that hearing students who have been jointly enrolled with hearing-impaired students evidence more favorable attitudes toward, and more knowledge about, hearing-impaired individuals.

This study may be considered as an indicator of the positive effects of integration upon hearing as well as hearing-impaired persons. The issues raised here offer rich research potential. Each research statement in the present study could be explored in far greater detail, possibly as a separate study in itself.

It is strongly recommended that such research be conducted on an on-going basis at CSUN and at other postsecondary institutions where hearing and hearing-impaired persons are jointly enrolled.

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ACHIEVEMENT OF DEAF STUDENTS

A Study of the Relationship Between Study Attitudes and Methods, and Grade Point Average of Undergraduate Hearing-Impaired Students at CSUN

Marcia Fankhauser

Predicting the academic success of applicants to college programs is a formidable task for any admissions office and has been the subject of numerous studies. Basically, for undergraduates at California State University, Northridge (CSUN), acceptance is based on an eligibility index computed from high school grade point average and the scores achieved on one of the various college entrance examinations.

California State University, Northridge, is one of the few postsecondary educational institutions enrolling hearing-impaired students at the undergraduate level on a relatively large-scale basis. The hearing-impaired applicants must meet the same requirements for admission as do all other entering students.

Undergraduates are required to take either the American College Test or the Scholastic Aptitude Test (SAT) and have a high school grade point average (GPA) above 2.00. The requirements for undergraduate transfer students are slightly different. They need not take one of the entrance tests if they have completed at least 56 transferable semester units or 84 transferable quarter units with a GPA of 2.00 or better. The admission requirements for non-residents of California are even higher. Occasionally the application of a hearing-impaired student turned down by the University may be reviewed by a committee and the student accepted on a "special admissions" basis.

Once accepted to CSUN, the hearing-impaired student is enrolled in classes with normal-hearing students and must compete on an equal basis with the normal-hearing students toward a degree. Support services provided for the hearing-impaired student in the classroom situation through Campus Services for the Deaf (CSD) include notetaking and interpreting. Also provided by CSD, but outside of the classroom, are the services of tutors and/or counselors.

A study of grade point averages recently completed by CSD has shown that the hearing-impaired students at CSUN have achieved at the same levels as the general university student population (3). Stated another way, hearing-impaired students show a normal distribution of grades when compared to all other students. This kind of finding has led to questions concerning the characteristics which distinguish high-achieving and low-achieving hearing-impaired students. Specifically, the purpose of this study is to determine the relationship between study attitudes and methods, as measured by the Study Attitudes and Methods Survey (SAMS), and academic achievement, as measured by cumulative GPA, of undergraduate hearing-impaired students at CSUN.

Seven major hypotheses were formulated for this study.

1. Academic Interest - Love of learning, as measured by Subtest A of the SAMS, is correlated to a significant degree (at .05 level of confidence or beyond) with GPA.
2. Academic Drive - Conformity, as measured by Subtest B of SAMS, is correlated to a significant degree (at .05 level of confidence or beyond) with GPA.
3. Study Methods, as measured by Subtest C of the SAMS, is correlated to a significant degree (at .05 level of confidence or beyond) with GPA.
4. Lack of Study Anxiety, as measured by Subtest D of the SAMS, is correlated to a significant degree (at .05 level of confidence or beyond) with GPA.
5. Lack of Manipulation, as measured by Subtest E of the SAMS, is correlated to a significant degree (at .05 level of confidence or beyond) with GPA.
6. Lack of Alienation Toward Authority, as measured by Subtest F of the SAMS, is correlated to a significant degree (at .05 level of confidence or beyond) with GPA.
7. The total of all the subtests of the SAMS is correlated to a significant degree (at .05 level of confidence or beyond) with GPA.

The findings from the study may have some predictive value that would allow early identification and lead to counseling of the potential underachiever among incoming students. If a degree of probability is established between the independent measures and the dependent measure of GPA, then the SAMS might be used to identify those incoming undergraduate hearing-impaired students who may have academic difficulty

because of poor study habits and/or specific attitudinal factors. These weak areas might then become the basis for remediation through counseling on an individual basis or as a study group, depending upon the indications of individual test scores, to examine their attitudes or to develop a wider range of study techniques.

Other information gathered in the course of the study includes the following:

1. functional hearing acuity
2. age at onset of hearing impairment
3. class level at CSUN (freshman, sophomore, junior, senior)
4. age

While no specific hypotheses were made concerning these other data, it is felt that this information might provide some further insight or relationship to motivation and behavior.

Review of Related Literature

Little research was noted in the literature related to the postsecondary hearing-impaired student and factors in college achievement. Therefore, unless otherwise stated, most of the research reviewed here is based on hearing college students.

Conflicting reports and ambiguous data characterize much of the literature concerning the predictive value of various factors for college success. While many factors may be important for any one student, it appears that for the majority of students applying for college entrance "the high school average (or class rank) is . . . the best single predictor of college grades; aptitude test scores . . . add appreciably to the accuracy of that prediction" (4).

A report published by Quigley in 1968 of 224 deaf graduates from regular colleges and universities confirmed that for deaf and hard-of-hearing students "college grades, and thus college success, were predictable from the reported high school grades which paralleled the college grades" (5).

However, in 1971, Greenberg, Director of Admissions and Records at Gallaudet College, stated that the verbal college aptitude tests usually given to entering students do not seem to predict with any accuracy the college performance of deaf students. "In other words, deaf students with virtually identical SAT verbal scores actually represent a wide range of ability" (1).

Of more particular relevance to the hypotheses in this study are the findings reported by the New York State Education Department which undertook a comprehensive review of nearly 100 studies related to the many factors affecting student achievement. The Bureau of School Program Evaluation undertook the review because of the tremendous growth in the amount of research since the late 1950s. The review integrates the findings of various investigations of determinants of student performance in the cognitive and non-cognitive areas. This study cited the fact that in all studies related to the examination of non-cognitive variables, which were described collectively as student self-concept and attitude toward learning, non-cognitive variables were related to student achievement in the intellectual areas.

One such non-cognitive measure specifically related to deaf students is reported by Gallaudet College. Among twenty measures used by Gallaudet in its admissions procedure is a "Rating of Motivation." The rating is made by the applicant's secondary school on several aspects of motivation. Gallaudet has found this rating to be among its most predictive measures for college success. It "has the added advantage of predicting most effectively in the mid-range area, where ability differences are extremely difficult to distinguish, but where there is a great range in degree of success in college. The ability of the motivation rating to predict college performance is largely independent of cognitive measures, and thus adds greatly to accuracy of prediction" (1).

Studies of non-intellectual correlates of academic achievement are numerous but also frequently unsuccessful (7). Basically the studies have explored family conditions and previous educational experiences, personality characteristics, and early training and experience.

To identify non-intellectual factors associated with academic achievement in college, Terrell investigated personality and motivational correlates, and general attitudes toward college and the value of education. Three questionnaires were administered: the 16 Personality Factor Inventory, a modified version of the Liverant Goal Preference Inventory, and a self-made questionnaire dealing with attitudes toward college. The major issues are summarized below. Academic achievement in all cases was defined by grade point average.

Students who believed that a high GPA was necessary to reach the goal that was most important to them performed better than students who believed that GPA was not so important. Social goals were as important to high achievers as to low achievers. The study concluded that the type of goal a student chose was not as important to the attainment of higher GPA as was the importance that the student himself attached to the relationship between his goal and the GPA. The overall importance of attending college was related positively to the performance of both males and females.

Relating actual academic achievement to the desire for higher GPA, the study showed that the desire for good grades was generally related positively to academic performance. Students who try to do well in everything they do perform better than other students. One conclusion drawn was that interest in achieving a high GPA may be a necessary condition for success in college.

Underachievers were found to have little interest in high achievement, even when they were predicted to do well. Socially-oriented behavior to cooperate with others in pursuing academic achievement was related positively to performance. The possibility was supported, too, that an unwillingness to rely on others for assistance in achievement situations is detrimental to academic effectiveness.

High performers described themselves on indices of personality and attitudes as more socially independent than lower performers.

Academic achievement among males increased with the tendency to acknowledge direct aggressive expression, while among females achievement was highest for those who acknowledged little aggressive behavior but had high guilt over expression of aggression. However, if competitiveness as an aggressive measure manifested itself in an unwillingness to cooperate with others in pursuing academic goals, then it was detrimental to academic effectiveness.

An intrinsic interest in intellectual activity was found to be related to performance among students of high academic ability, but not among students of low ability. It was further concluded that students with deficiencies in intellectual skills who exert the additional effort required to perform well do so for reasons other than intrinsic interest in the subject matter they are studying.

A positive relationship was found to exist between self-acceptance and performance. A lack of test anxiety was thought to be associated with self-acceptance and self-confidence. However, test anxiety was found in this study to be unrelated to performance.

In conclusion, Terrell felt that many of the results of his study were as inconclusive as those found in other studies. Overall, however, his findings were that relevance does exist between academic achievement (GPA) and a student's attitudes toward goals, desire to achieve, social motivation, independence, aggressiveness and competitiveness, intellectualism, and self-acceptance. No relationship was found between achievement and test anxiety.

Selection of the Sample

The sample for this study was limited to undergraduate hearing-impaired students currently registered during the 1975 spring semester at California State University, Northridge (CSUN). All 80 undergraduate students enrolled were contacted by letter and the study was explained. Each student was asked to participate by coming to a specified location between May 9th and May 16th, 1975, to complete two test instruments for a maximum time involvement of one hour. The 28 students who responded became the sample for this study. This number represents 35 per cent of the total undergraduate hearing-impaired population enrolled, but is 41 per cent of the full-time day students.

Several factors may have influenced the number in the sample. The participation dates in the study closely approximated the university schedule for final examinations, when students are more involved in studying and are less likely to appear in person to participate in a study. Not all of the undergraduate hearing-impaired students are full-time day students, nor do they come to the Campus Services for the Deaf office on a regular basis where, in addition to the letter they received by mail, they would have been personally contacted to participate in the study.

Selection of the Testing Instrument

The major instrument used was the Study Attitudes and Methods Survey (SAMS). It was selected because of its design to measure non-cognitive factors associated with academic achievement. It assesses attitudes which may hamper or facilitate a student in reaching academic goals, and methods used by a student to achieve academic success.

The SAMS was developed by William B. Michael, Joan J. Michael, and Wayne S. Zimmerman from an analysis of a large set of items collected over a period of more than 20 years by the first author. The norms are based on data from 947 students from a community college within a few miles of the Los Angeles Civic Center. Ninety per cent of the students were between 17 and 26 years of age and the ethnic group breakdown approximated that of the Los Angeles population. The test has not been standardized on the hearing-impaired population.

The SAMS measures six dimensions, each composed of 25 items. These 150 items are answered on a four-choice continuum representing the degree to which the respondent is similar to the statement made. These items were found to distinguish between high-achieving and low-achieving students.

As defined by the authors, the six factor dimensions measured by the SAMS scales are as follows:

1. Academic Interest - Love of Learning
   A measure of intrinsic motivation involving love of learning for its own sake.
2. Academic Drive - Conformity
   A measure of extrinsic motivation to enhance the status and prestige of the student in academically oriented activities involving persistence (determination to succeed) and conformity (meeting teacher's expectations and institutional requirements).
3. Study Methods
   A measure of effective study skills and techniques which result in the optimal use of time and ability.

4. Study Anxiety
   A measure of the concern over doing well on examinations and assignments which reflects a lack of self-confidence and self-assurance.
5. Manipulation
   A measure of one's inclination to use power and influence to achieve goals and to enhance status at the expense of others in order to gain favorable treatment or special consideration.
6. Alienation Toward Authority
   A measure of feelings of isolation and rejection in the academic environment and of hostility toward the academic institution and its members, and resentment of its rules and regulations.

Another instrument used was the Hearing Scale II taken from the National Census of the Deaf Population (6). The Scale consists of a series of statements related to the individual's ability to hear and understand speech under particular circumstances. Scores from the Hearing Scale II are highly correlated, but at a level less than unity, with audiometric scores of better-ear average for an individual. Therefore, the questions about hearing are a different means of determining functional hearing acuity.

Accordingly, then, the most likely better-ear average (BEA) for a person having a particular score on Hearing Scale II is as follows:

Scale Score	Mean BEA in Decibels, ISO
1	13.7
2	28.3
3	42.2
4	63.3
5-8	81.8

The scale score refers to the highest item in the Hearing Scale II to which the person responded "yes".

Administration of the Testing Instrument

During the time periods specified for testing, the interviewer remained at Campus Services for the Deaf where students come to pick up their school mail. Each student who came in was approached by the interviewer, the purpose of the study was explained, and the student was asked to remain and complete the test instrument.

Prior to the study, consideration was given to the possibility of sending the survey through the mail with return envelopes enclosed. However, the Testing and Counseling Office at CSUN did not feel that this method would be in keeping with the standards set for giving the SAMS. Therefore, an additional contacting method was established to get student participation.

Students who were willing to participate in the study, but who were unable to come in person during the specified times with the interviewer, were able to obtain the test instrument from any of the counselors at Campus Services for the Deaf. Twenty students became involved through the established testing sessions. Eight others, when they were in the office on regular business or appointments, were approached by the counselors, who explained the purpose of the study and asked for the student's participation. The student was asked to complete the test and return it to the counselor.

Findings

The 28 students in the sample ranged in ages from 19 to 41 years of age, with the mean age being 23.89 years (Table 1).

Table 1. Sample Age

Years	Sample Number (N)
19	1
20	3
21	8
22	3
23	4
24	2
25	3
26	1
34	1
40	1
41	1
	28

As seen in Table 2, the sample consisted of five freshmen, nine sophomores, eight juniors, and six seniors, for a total of 28, of whom 19 were females and nine were males.

Table 2. Sample Class Standing

Class	Sample Number	Females	Males
Freshmen	5	3	2
Sophomores	9	6	3
Juniors	8	5	3
Seniors	6	5	1
TOTAL	28	19	9

Table 3 shows that slightly over two-thirds, or 18, of the students lost their hearing at less than one year of age.

The variables considered in this study were grade point average, age at onset of hearing loss, six individual subtests of the SAMS, and hearing acuity as measured by Hearing Scale II, used in gathering the data for the *National Census of the Deaf Population* (6). The mean and standard deviation scores for each of the variables are found in Table 4.

Table 3. Age at Onset of Hearing Loss

Age	Sample Number
<1 year	18
2 years	2
3 years	1
4 years	1
5 years	1
8 years	1
9 years	1
12 years	1
18 years	1
Unknown (preschool)	1
TOTAL	28

Table 4. Means and Standard Deviation

Variable	Mean	Standard Deviation
GPA	2.4729	0.5690
Age at Onset	5.7857	18.7920
SAMS		
Subtest A	40.1071	10.2789
Subtest B	49.7857	9.1017
Subtest C	41.1429	9.0050
Subtest D	39.5000	11.9923
Subtest E	24.5000	11.3055
Subtest F	25.7500	12.3217
TOTAL (for subtests)	220.7857	27.9872
Hearing Acuity	2.8571	3.2966

The seven major hypotheses which were formulated for this study were tested by correlating each of the SAMS subtests and the total of the SAMS scores with GPA. The correlation coefficient and the level of significance for each variable pair are found in Table 5.

Table 5. Correlation of GPA and the SAMS

Variable Pair	Correlation Coefficient	Significance
GPA Academic Interest (Subtest A)	-0.1131	NS*
GPA Academic Drive (Subtest B)	0.2897	NS
GPA Study Methods (Subtest C)	0.1584	NS
GPA Lack of Study Anxiety (Subtest D)	-0.1651	NS
GPA Lack of Manipulation (Subtest E)	-0.3590	NS
GPA Lack of Alienation Toward Authority (Subtest F)	-0.1483	NS
GPA SAMS Total	-0.1774	NS

*Not significant at a level of .05.

No specific hypotheses were made concerning the age at onset of hearing loss or concerning functional hearing acuity. Table 6, however, shows the computed correlation for each of these variables with GPA.

Table 6. Correlation of GPA, Age at Onset, and Hearing Acuity

Variable Pair	Correlation Coefficient	Significance
GPA Age at Onset	0.2952	NS*
GPA Hearing Acuity	0.2423	NS

*Not significant at a level of .05.

The results indicate that there is no significant relationship between GPA and either age at onset or functional hearing acuity.

Conclusions and Recommendations

The findings of this study indicate that the Study Attitudes and Methods Survey does not appear to predict academic success for undergraduate hearing-impaired students. This is not to say that non-cognitive factors do not have some relation to academic success. It may be, however, that this particular testing tool is unreliable and invalid for the hearing-impaired population due to any of a variety of factors. Among the factors might be the type of language used in the test questions, or the student's lack of familiarity with tests in which the items are answered on a four-choice continuum. Nevertheless, it is recommended that the SAMS not be used with either entering hearing-impaired students or enrolled hearing-impaired students as a predictive tool related to academic success until further research is conducted with it.

A meaningful finding of this study may be the fact that age at onset of hearing loss and functional hearing acuity had no correlational significance with GPA. As a part of any predictive tool for accepting hearing-impaired students to CSUN, these two variables would seem to have little value.

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Comparative Studies of Academic Achievement Between Hearing-Impaired and Non-Hearing-Impaired Students at California State University, Northridge

Harry J. Murphy

Purpose

The purpose of the two studies reported herein was to determine if there were significant differences in the academic achievement between hearing-impaired (HI) and non-hearing impaired (NHI) students at California State University, Northridge (CSUN). The dependent measure of academic achievement was grade point average (GPA).

Hypothesis

The general hypothesis formulated for the studies was: NHI academic achievement as measured by GPA is significantly superior at each class level to that of HI academic achievement.

Method

Two studies were conducted over four semesters. The spring and fall semesters of 1973 were considered in Study I; the spring and fall semesters of 1974 were considered in Study II.

GPA observations were recorded for the entire population of HI subjects. Every grade received by every HI subject for these semesters is included in these studies. Subjects were categorized by class level: freshmen, sophomores, juniors, seniors, all undergraduate students, and graduate students. GPA observations of equal numbers of NHI subjects by class level were made by computerized random selection. The number of observations reported in each study equaled the total of observations for spring *plus* those for fall, resulting in the numbers given in Table 1.

Table 1. Number of Observations in Each Study

	Study I	Study II
Freshmen	34	40
Sophomores	23	23
Juniors	39	44
Seniors	30	25
All Undergraduates	126	132
Graduates	50	75

The dependent measure was GPA. At CSUN, GPA's are distributed along a continuum of 0-4 grade points.

Table 2. Distribution of GPA Scores.

A = 4 grade points
B = 3 grade points
C = 2 grade points
D = 1 grade point
F = 0 grade points

GPA's are computed in this way: if a student carried 12 semester hours (four courses, three units credit each) and earned two A's, one B, and one C, his GPA is computed by multiplying the grade points for each grade times the number of units for each course (4X3 + 4X3 + 3X3 + 2X3), and dividing the sum (39 grade points) by the total number of semester hours (12). Thus, 39 ÷ 12 = a GPA of 3.25.

In each of the two studies, GPA's were recorded over two semesters for each student. The independent variables were HI and NHI groups of students and class level.

In each study separate analysis of variance (ANOVA) was performed for each class level. The .05 level of confidence was the criterion used to determine if the hypothesis should be accepted or rejected. Homogeneity-of-variance tests were conducted to insure that the assumptions for use of the ANOVA model were satisfied.

Results and Conclusions

The data were analyzed on a 3170 CDC computer at the Computer Center, CSUN. Table 3 shows the obtained results of Study I for HI and NHI groups at all levels. Table 4 gives comparable data for Study II.

TABLE 3. Mean GPA's, Standard Deviations, N, and Probability for HI and NHI Groups at CSUN for Spring and Fall Semesters, 1973 (Study I)

	Hearing Impaired			Non-Hearing Impaired		
	Mean	SD	N	Mean	SD	P
Freshmen	2.48	.74	34	2.49	.74	NS
Sophomores	2.60	.52	23	2.62	.54	NS
Juniors	2.40	.57	39	2.71	.66	.03*
Seniors	2.67	.37	30	2.74	.55	NS
All Under-graduates	2.52	.58	126	2.64	.64	NS
Graduates	3.16	.39	50	3.44	.47	.001*

NS = not stastically significant
* = at or beyond .05 level of confidence

TABLE 4. Mean GPA's, Standard Deviations, N, and Probability for HI and NHI Groups at California State University for Spring and Fall Semesters, 1974 (Study II)

	Hearing Impaired			Non-Hearing Impaired		
	Mean	SD	N	Mean	SD	P
Freshmen	2.55	.65	40	2.63	.61	NS
Sophomores	2.50	.87	23	2.72	.64	NS
Juniors	2.49	.70	44	2.72	.53	NS
Seniors	2.76	.57	25	2.58	.55	NS
All Undergraduates	2.56	.69	132	2.67	.58	NS
Graduates	3.34	.45	75	3.41	.44	NS

Table 3 shows that in Study I the NHI group out-achieved the HI group at the junior and graduate levels, but not at the freshman, sophomore, senior, and all-undergraduate levels.

Table 4 shows that in Study II the NHI and HI groups achieved at levels that were not significantly different.

Until about 10 years ago a hearing-impaired person with college aspirations had two choices: (1) attend Gallaudet College, a liberal arts college for the deaf in Washington, D.C., or (2) attend a "regular" college of his choice.

At Gallaudet College instruction is in sign language so students with this skill are able to follow lectures and participate in class discussions. At regular colleges none of the instructors are able to use sign language so a hearing-impaired student would have a great deal of trouble following a lecture and participating in class discussions. Those in regular colleges were left to their own resources to secure tutors, notetakers, or other services needed to increase the probability of their success.

Because so many hearing-impaired persons succeeded at Gallaudet, and so few in regular colleges, most persons assumed that a hearing-impaired person with college aspirations would be best educated in a college for the deaf, where the instructors communicate in sign language and where hearing-impaired persons compete only with other hearing-impaired persons.

The innovation of support services about 10 years ago allowed hearing-impaired persons to attend a regular college. Typical support services are interpreting, notetaking, counseling, and tutoring. This new model called for education in a regular college where none of the instructors knew sign language and where hearing-impaired persons compete with persons with normal hearing. The major intervening variable between the two different models of education was that of support services.

Many persons—including the most knowlegeable professionals in the field—questioned the efficacy of "integrated" education. The concept of an interpreter functioning as a third-party facilitator between an instructor and a hearing-impaired student was largely untried. There was some question as to the ability of sign language to convey sophisticated vocabulary and concepts. There were questions about the adequacy of the educational background of most hearing-impaired persons to compete in such a setting. There were questions about acceptance by hearing student-peers and instructors, questions about social activities for hearing-impaired persons, and so on.

Over the past 10 years, many integrated postsecondary programs have sprung up. Most publications about them are non-empirical in nature and few data are available to support claims of "successful" integration.

An earlier evaluation of the achievement of hearing-impaired students at CSUN indicated that, as a group, they exceeded the minimums required by the university to be considered in "good standing." These GPA minimums are 2.0 for undergraduates; 3.0 for graduate students.

Some advisors to the CSUN program felt that this was a significant finding in itself because one could conclude that hearing-impaired students were indeed "succeeding" in a regular university.

The notion of a direct comparison of the grades of hearing and hearing-impaired students is another matter. Given the nature of the communication handicap, why should one expect HI students to do as well as NHI students? This rationale led to the stating of the hypothesis in favor of the NHI group.

Study I. The findings indicate that HI persons achieve at a rate that is not significantly different from NHI persons as freshmen, sophomores, seniors, and all undergraduates, but that the NHI group out-achieves the HI group at junior and graduate levels.

A reasonable explanation of the differences at the junior and graduate levels seemed to be the higher number of transfer students at these levels. The thinking was that juniors and graduates achieved at a lower rate because the CSUN style of education, and the university itself, was new to those transfer students in these two groups. However, if this was true of juniors and graduates who were transfers, why was it not true of freshmen, none of whom had previously attended CSUN? We could not explain the success of the freshmen in these terms; however, a research design to test the transfer effect among juniors and graduates was being formulated when the results of Study II became known.

Study II. The findings indicate no significant differences at any levels between groups. The transfer effect, if there is one, was not evident in Study II.

On the basis of the results of these two studies, it must be concluded that hearing-impaired students at CSUN receive about the same grades as their fellow students with normal hearing.

It is also concluded that these finding validate the model of "support services" as a key (perhaps "the" key) variable in successfully competing in an integrated postsecondary institution. While this offers the promise of any hearing-impaired person

attending any institution with "support services," the reader is cautioned that the quantity and quality of support services at CSUN are rich and extensive and may not be comparable at other institutions.

The population of hearing-impaired students at CSUN has demonstrated that such persons are fully capable of achieving in what has to be an uphill battle for them. Perhaps the combination of motivation (CSUN professors perceive hearing-impaired students to be more highly interested (1) than hearing students), opportunity, and adequate support results in the realization of the potential of hearing-impaired persons.

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A CHALLENGE
TO THE CSUN PROGRAM

Comments

Edgar L. Lowell

I am pleased to have been asked to discuss some of the implications of the papers in this report. Taken together they represent a progress report on an exciting postsecondary experiment with integration of deaf students in a college designed primarily for hearing students. They also begin to explore some issues that are of interest to all concerned with the education of the deaf. Rather than attempting to comment on all the articles, let me say a few words about one or two that raise some interesting issues.

The comparison of deaf and hearing students' grade point average was of particular interest. My first tendency was to question the results. I have repeatedly heard about the academic retardation of deaf students. I remember writing an article in 1962 (4) in which I cited a study by Quigley and Frisina (6) of 240 selected deaf students in schools all over the United States. Although their scores on the Chicago Non-Verbal Scale were slightly better than average, their academic achievement as measured by the Stanford Achievement Test showed an academic retardation of four years. Some 40 years earlier Pintner and Reamer (5) studied more than 2,000 children in schools for the deaf. Their conclusions were that deaf children were approximately two years behind their hearing controls on intelligence tests and five years behind them educationally.

More recently the Office of Demographic Studies at Gallaudet College has again documented the overall academic retardation of some 19,037 deaf students in their 1971 annual survey (1).

Thus over a period of 55 years we have been exposed to repeated reports on the academic retardation of deaf students. How could it now be that deaf students could be earning grades essentially the same as hearing students at CSUN?

One possibility is that the Northridge results can be explained by "skimming." It may be that the publicity that Northridge has received through its National Leadership Training Program and its various summer programs for the deaf, plus the attractiveness of living in Southern California, has attracted the most capable deaf college applicants. Have they skimmed the cream of the crop? We know that the skimming phenomenon occurs in precollege programs where hearing-impaired students with more residual hearing and intellectual advantages are frequently removed from the traditional education of the deaf program and integrated into schools with hearing students. The fact that their performance is not counted in studies of deaf programs may partially account for the overall poor performance cited above. Presumably they would also be the ones that would find an integrated college program most compatible with their previous experience. This is a simple question and deserves an answer. It would be reasonably simple to examine the previous academic experience of the Northridge University population and to look at any other data that would support or refute this possible explanation.

Another possibility is that the challenge and stimulation of attending college with hearing students has provided the motivation to induce these students to work at their full potential. We are all familiar with the arguments that some forms of deaf education are too "protective" and that some represent an educational ghetto. I am not certain that those criticisms are still valid, but I think it is true that given an appropriate challenge we can all rise above our usual level of effort. It is not hard for me to believe that a period of great challenge for young people, whether hearing or deaf, comes at the time they begin their postsecondary education. This argument is totally compatible with those advanced by advocates of mainstreaming, and while I am not thoroughly in accord with all of the claims, I do recognize the validity of their major argument.

Another possibility is that faculty members are "soft" on deaf students, i.e., they do not grade them by the same standards they apply to hearing students. This is a difficult issue to resolve. Faculty members may consciously or unconsciously take into account a student's language deficit in evaluating classroom or examination performance. It is also difficult to resolve because of the highly subjective nature of most college grading systems. It is quite possible that the knowledge and performance of a B math student at Massachusetts Institute of Technology, for example, may be superior to an A math student at some small, less academically renowned institution. What does a B grade for a deaf student at Northridge mean? We clearly need some external criterion. The Graduate Record Examination might provide the answer, but in the Babbidge Report (2) we saw that when compared with 242 other colleges, Gallaudet graduates' mean performance was lower than all but between 10 and 17 colleges, depending on the subject matter area. Again we are not certain whether this is a true reflection of deaf students' ability, or whether they were unduly penalized by a language handicap. Clearly this is also an issue deserving further attention.

In discussing this issue with interested faculty members, I find some who readily admit that they are "soft" on grading deaf students. There are others who argue that some faculty members may

be biased against the deaf student because they place a restriction on the instructor's manner of teaching (must face the class while talking and not cover his mouth with his hands, etc.). They may take more time by asking questions on material they have missed. Such a prejudice could work to reduce the instructor's grades to all deaf students. I have heard some intimation via the "underground" that some deaf students believe this is true of some faculty members.

It has been argued in some quarters that despite the subjective nature of grades, the process of acieving a "good grade," regardless of how it was done, is a good indicator of the student's ability to "succeed within the system." Again we have a question which demands further study.

The reason I find the area of academic performance of such great interest is because of the rather obvious implication it has for our thinking about postsecondary education for deaf students. If the Northridge findings are confirmed; that is, if this represents a true picture of the academic performance of deaf students, I think we will have to re-examine our thinking about postsecondary education for the deaf. Even if there is some "skimming" and some of the faculty are soft on deaf students or if in fact the GPA comparisons with hearing students are not quite as favorable as they now appear, this would still appear to be a very viable alternative to the existing programs.

The next issue which has attracted my attention is the effect of deaf students on the total college community at Northridge. Carter's study (3) suggests that contact with deaf students makes a difference in both the attitudes and knowledge of hearing students. If we concede that a great part of the deaf individual's problem in adjusting to society is that society does not understand deafness, the kind of experience that deaf students are providing the hearing student body should have a beneficial effect on at least that segment of the hearing population. If these hearing college graduates go on to positions of responsible leadership in the community, we could reasonably expect them to carry with them a much more postive attitude about deaf people and their capabilities.

Another interesting side effect of having deaf students on campus is the interest of hearing students in manual communication. At one point in time there were more hearing students enrolled in sign language classes on the Northridge campus than there were deaf students. Is this an example of the desire of today's young people to do something socially significant, to "give of themselves" by helping others? Or is it simply that the hearing students were attracted to sign language because of the outstanding dramatic programs sponsored by the Center on Deafness? It may merely be student interest in "a new art form." Regardless of the reason, I view this as a positive development that should also help to close the gap that frequently exists between the hearing and the deaf worlds.

We might also ask what integration means on the Northridge campus. Are the deaf students truly integrated, or do they remain as an isolated subculture within the college community? I would imagine that some indication of this would be the extent to which deaf students participate in campus extra-curricular activities. The fact that in the fall semester of 1975 there were 152 deaf students enrolled in 405 classes throughout the campus would seem to argue against the notion of an isolated deaf group, at least as measured by broad participation in the college offerings. This is particularly evident when you consider the number of required basic courses which all students must take and which inevitably result in fairly large numbers of deaf students in some classes. Another way of looking at the extent of integration is to note that deaf students represent approximately one-half of one per cent of the total college population but are enrolled in eight per cent of the classes.

In summary, this is an exciting report which raises a number of interesting questions. Many of them can and should be answered. The answers will be of interest to all who are concerned with postsecondary education of hearing-impaired individuals.

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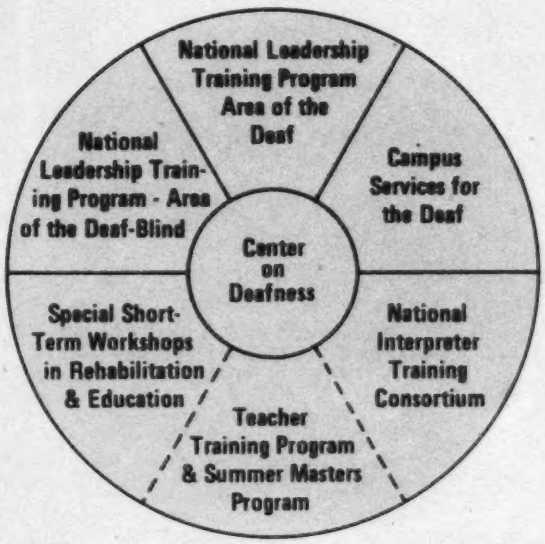
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